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Weld Ice Cream Cans Electrically

Longitudinal Seams Closed by Arc Welding and Bottom Attached by Resistance Welding—Savings Effected in Retinning the Cans

BY ROGERS A. FISKE*

AUTOMATIC arc and resistance welders, used by the Solar-Sturgess Mfg. Co., Chicago, in the process of manufacturing ice cream cans, have resulted in closing the longitudinal and bottom seams of a can in one-fourth of the time formerly required. This is equivalent to increasing production approximately four times. In addition, much valuable floor space has been saved and worth-while economies have been made in labor and material.

The old process used in making the longitudinal seam was to form a lap of the metal which was spot welded at points about 2 in. apart. The seam was then soldered to make it tight. The cylindrical portion of the can and the flanged bottom were tinned separately, fitted together and soldered at the circumferential seam. In order to conserve ice cream cans it is customary for users to return them to the factory every 18 months or two years for the purpose of having them retinned. Bottoms held in place by a soldered joint are not secured firmly enough to withstand the process of retinning used at this plant, and therefore the factory found it necessary first to remove the bottom, retin it and the cylindrical portion separately, and then resolder the bottom in place. With electric welding the can is retinned as a unit, thus saving considerable expense to the owner.

Welding of Longitudinal Seam Is Rapid

The material used for making ice cream cans is No. 18 gage black sheet. The cylinder material is cut to size, rolled to shape and delivered to the automatic arc welding machines. Each machine is manned by two operators, one a welder and the other a helper. The welder starts and stops the arc and follows it in its course along the seam, and the helper removes the finished cylinder from the machine and places in position the next cylinder to be welded. The equipment consists of two General Electric Co. automatic arc welders, furnished with energy from a 400-amp., constant potential, motor generator set. Each machine uses from 70 to 75 amp. at 20 volts, and the welding is done with 3/32 in. "Armco" wire, which is purchased in bundles and fed continuously to the machines. The longitudinal seam of each can is 18 in. long and is welded in 30 sec., that is, at the rate of 180 ft. per hour. Including handling as well as clamping the can on and off the travel mechanism, a total time of 1.4 min. is consumed. Thus 48 cans an hour are made on each machine. In a 9-hr. day this means a production of 432 longitudinal seams or 432 cans. The arc welding is stopped a short distance from the bead at the top of the can, and gas welding is used to close the seam at that point.

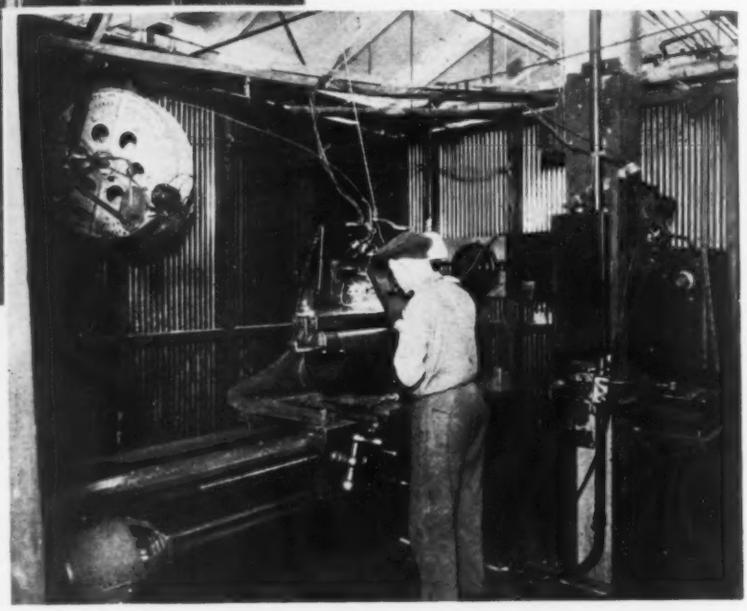
From the arc welding machines the cans are conveyed a short distance to a grinder, which is used to clean off the outside of the cylinder on a ring near the bottom of the can. This provides a clean surface on the line where the resistance welder fuses the flanged bottom to the cylinder.

Resistance Welding Done Under Water

The cylinder, with the bottom pressed in place, is then fitted to a tailstock or jig mounted on a General Electric Co. circular or resistance welder. The can is fitted over one of the electrodes, which is a small copper disk, and is butted against a gage or stop. The

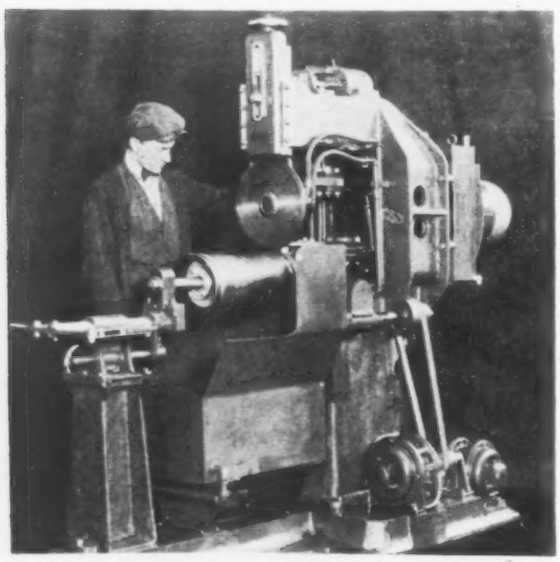
*Western editor THE IRON AGE, Chicago.

Operation of the Arc Welder Is Automatic. Welding wire is fed continuously from a coil, shown above at the left



Placing the Cylindrical Portion of an Ice Cream Can in Fixture on the Arc Welder

upper electrode is a large copper disk, which is raised and lowered by means of air pressure under the control of a manually operated valve. The cylinder and the flange of the bottom are securely clamped between the two copper electrodes, which are rotated slowly by an electric motor. The pressure between the two electrodes may be as high as 1000 lb. if desired. The disks are cooled by means of water streams directed against the flat surfaces. The water is drawn by means of a small motor-driven centrifugal pump from a tank at the base of the welding machine. The water is forced through the electrode-spindle bearings and finally discharged against the electrodes, from which it drains back to the tank. The water in the tank is cooled by pipe coils through which city water is circulated. It is apparent that welding actually takes place under water inasmuch as the cooling water for the upper electrode will surround the metal of the can at the point where it is being welded. This, is is said, has no harmful effects. Moreover, the can is cool and can readily be handled the moment it is removed from the tailstock of the machine.



The Resistance Welder Closes the Bottom Seam. The upper electrode, or copper disk, is movable in the vertical plane

The resistance welder is provided with three speeds: 45, 66 and 87 in. per min. The circumference of an ice cream can is about 30 in., and therefore the machine is of more than ample capacity to weld in the bottoms of cans which can be longitudinally welded on the two arc machines.

Produce 864 Cans Daily

The daily production of ice cream cans at this plant is about 2500, and of this number 864 are electrically welded. The remainder are manufactured by the old method, not because the maker is not thoroughly convinced of the advantages of electric welding both to the consumer and the producer, but because in any radical departure of this nature it takes some time to win the confidence of the trade. This company expects that by the end of this season it will have approximately 100,000 electrically welded cans in use by the trade.

The production of ice cream in the United States averages 2.8 gal. per person per year, according to the Department of Agriculture, which receives statistics from manufacturers of dairy products. The total quantity of ice cream consumed last year was estimated at 322,729,000 gal., compared with 285,550,000 gal. in 1924. In that year the average consumption per person was 2.5 gal. In 1910 the annual consumption of ice cream was 1.04 gal. per person, and in 1914 1.18 gal.

Production of electric power by public utility plants in the United States in February is reported by the Geological Survey at 5593 millions of kwhr. This drop from the 6117 of January and 6153 of December is only slightly greater than the decrease in length of month. All three months have shown daily average output greater than that of the highest previous month of any year.

A patent covering the manufacture of iron sheets for porcelain enameling purposes was issued March 30 to the American Rolling Mill Co., Middletown, Ohio.

Chemical Analyses of Large Ingots

Facts As to Inclosures and Gases More Vital Than Strict Chemical Specifications—Melting Practice and Analysis Both Important

BY J. H. HRUSKA*

WITHIN the past few years, the chemical and physical properties of forging, as well as rolling, steel have been thoroughly investigated and, because of this, specifications for smaller size ingots and forgings were given to steel men and to designing engineers.

A review of the current technical literature on analyses and investigations of *large* ingots, however, ordinarily fails to give any desired information. To fill this vacancy the author gives in the following tables a series of analytical determinations made from the material of ingots weighing from 2 to 100 tons, above which limit individual ingots are very seldom cast or used.

In carrying out this work, an effort was made to designate the importance of the relationship between chemical analyses and soundness; these being factors which should always be considered when classifying or judging certain grades of ingot iron and steel.

Methods of Manufacture

In modern metallurgical practice large ingots are cast from steel made by one of the following processes:

Basic open-hearth	Basic electric
Acid open-hearth	Acid electric
Basic and acid open-hearth	Basic and acid electric

As far as quality is concerned the best results—chemically and physically—were obtained by combining the desulphurizing and dephosphorizing effects of either one of the basic processes with the better deoxidation, degasification and elimination of inclosures on an acid hearth. The use of these methods is not always applicable due to the considerably higher melting and refining expenses. Thus the greatest number of large ingots (particularly plain carbon steel ingots) are made mostly from basic, or sometimes acid, heats.

Basic Open-Hearth Ingots

Without doubt the largest ingots as well as the greatest number of individual quality forgings ever produced were made from steel melted on basic lined open-hearth furnaces. It is generally agreed that the superiority of this ingot steel is due to desulphurization and dephosphorization, but it cannot be forgotten that, during this purification, enough chance to the produced chemical constituents must be given to leave the bath as completely as possible. Impurities, solid and gaseous, cause very often a far lower grade of steel than would have been produced by melting the raw materials on an acid hearth, i.e., with higher sulphur and phosphorus, but without inclosures or sonims!

This viewpoint should also be held in mind when looking over the analyses in Table I, in which the higher sulphur and phosphorus offers no reason for considering the material of a lower grade. Particularly in the manufacture of the largest sizes of ingots, where under certain conditions two or three or even four heats have to be combined, comparatively narrow limits of chemical composition are of no importance. Various killing and pouring practices prove that exactly the

Table I.—Analyses of Basic Open-Hearth Steel Ingots

Weight of Ingot, Tons	Chemical Analysis, Per Cent						
	C	Mn	Si	P	S	Ni	Cr
2	0.32	0.68	0.27	0.032	0.026		
2	0.39	0.76	0.34	0.037	0.029		
5	0.26	0.63	0.33	0.035	0.019		
5	0.34	0.85	0.37	0.030	0.028		
5	0.42	0.68	0.32	0.042	0.032		
10	0.29	0.75	0.24	0.034	0.032		
10	0.36	0.73	0.25	0.039	0.033		
10	0.40	0.60	0.23	0.029	0.024		
10	0.38	0.78	0.37	0.036	0.022		
20	0.20	0.74	0.34	0.030	0.022		
20	0.34	0.68	0.30	0.028	0.020		
20	0.41	0.79	0.35	0.042	0.025		
30	0.38	0.60	0.18	0.040	0.030		
50	0.45	0.70	0.30	0.032	0.028		
50	0.47 0.48	0.82 0.79	0.34 0.30	0.036 0.029	0.032 0.026		
80	0.34 0.37	0.74 0.68	0.36 0.41	0.038 0.030	0.028 0.022		
80	0.42 0.39	0.70 0.66	0.27 0.33	0.039 0.029	0.030 0.027		
100	0.38 0.41	0.76 0.81	0.37 0.34	0.041 0.033	0.018 0.022		
100	0.48 0.49 0.50	0.83 0.78 0.76	0.32 0.28 0.29	0.034 0.030 0.024	0.020 0.027 0.020		
2	0.34	0.62	0.17	0.026	0.021	1.74	0.50
2	0.49	0.68	0.41	0.012	0.018	2.58	0.74
2	0.44	0.72	0.28	0.018	0.023	3.53	...
5	0.38	0.65	0.32	0.034	0.022	2.04	0.98
10	0.26	0.66	0.23	0.022	0.016	1.55	...
30	0.32	0.58	0.31	0.018	0.024	2.77	0.51
50	0.28 0.30	0.75 0.69	0.16 0.24	0.022 0.028	0.020 0.024	3.02 2.94	0.78 0.84

Table II.—Analyses of Acid Open-Hearth Steel Ingots

Weight of Ingot, Tons	Chemical Analysis, Per Cent							
	C	Mn	Si	P	S	Ni	Cr	Va
2	0.37	0.77	0.33	0.038	0.034	...	...	...
5	0.45	0.69	0.34	0.040	0.029	...	...	...
5	0.26	0.71	0.41	0.034	0.031	...	...	...
10	0.30	0.76	0.35	0.038	0.033	...	...	...
20	0.51	0.62	0.28	0.027	0.025	...	...	...
30	0.21	0.60	0.36	0.030	0.034	...	...	...
50	0.43 0.41	0.73 0.70	0.34 0.38	0.037 0.041	0.030 0.038	...	...	...
2	0.28	0.72	0.22	0.035	0.019	2.94	...	...
2	0.38	0.68	0.19	0.038	0.023	2.08	0.96	...
5	0.42	0.63	0.29	0.043	0.038	3.23	1.12	...
10	0.39	0.58	0.20	0.033	0.030	2.88	0.80	...
30	0.31	0.62	0.27	0.046	0.038	2.98	0.50	...
50	0.35 0.37	0.59 0.64	0.22 0.28	0.037 0.041	0.034 0.028	2.11 2.24	0.48 0.56	0.08 0.11

Table III.—Analyses of "Refined" Open-Hearth Steel Ingots

Weight of Ingot, Tons	Chemical Analysis, Per Cent							
	C	Mn	Si	P	S	Ni	Cr	Va
2	0.32	0.54	0.29	0.024	0.021	1.56	0.48	...
5	0.45	0.61	0.34	0.022	0.019	2.92	0.78	...
5	0.51	0.59	0.32	0.012	0.016	3.11	0.98	...
10	0.34	0.71	0.41	0.018	0.006	1.89	0.51	...
20	0.38	0.68	0.40	0.022	0.008	2.84	0.91	...
30	0.42	0.93	0.28	0.022	0.012	2.18	0.57	0.12

Table IV.—Analyses of Basic Electric Steel Ingots

Weight of Ingot, Tons	Chemical Analysis, Per Cent							
	C	Mn	Si	P	S	Ni	Cr	Va
2	0.28	0.56	0.17	0.018	0.012	3.04	...	...
5	0.41	0.68	0.24	0.022	0.014	...	...	...
2	0.47	0.64	2.13	0.016	0.008	...	...	...
2	0.50	0.73	0.34	0.014	0.005	2.76	0.97	...
2	0.44	0.62	0.38	0.011	0.006	2.60	0.76	...
3	0.61	0.71	0.07	0.023	0.017	...	...	...
3	0.42	3.42	0.35	0.016	0.011	14.92	0.48	...
5	0.43	0.57	0.30	0.006	0.011	1.53	0.55	...
5	0.25	0.62	0.16	0.014	0.018	...	...	...
5	0.40	0.53	0.32	0.016	0.014	1.89	1.06	0.08
10	0.22	0.67	0.28	0.021	0.020	...	...	...
10	0.39	0.84	0.29	0.017	0.010	3.07	0.29	...

Table V.—Analyses of Acid Electric Steel Ingots

Weight of Ingot, Tons	Chemical Analysis, Per Cent						
	C	Mn	Si	P	S	Ni	Cr
2	0.38	0.86	0.29	0.032	0.024	1.88	0.58
3	0.42	0.77	0.31	0.029	0.026	...	...
3	0.28	0.71	0.24	0.034	0.019	3.16	...
5	0.37	0.62	0.37	0.038	0.031	2.18	1.14
5	0.47	0.58	0.19	0.026	0.028	3.68	0.47

*Metallurgist International Harvester Co., McCormick Works, Chicago.

same chemical analyses of ladle tests give widely different results and different chemical compositions give the same physical properties. The proof of this statement is to be found in the daily experience of every practical steel man and metallurgist.

Acid Open-Hearth Ingots

In the acid practice, the impossibility to lower the phosphorus and sulphur content necessitates the use of high-grade raw material in order to produce large ingots of good quality. On the contrary, acid steel, if properly made, leaves the furnace hearth almost free from absorbed gases, providing the opportunity to produce ingots free from blow holes which would arise from the composition or manufacture itself. In Table II a few analyses of acid open-hearth steel for large ingots are given.

Refined Open-Hearth Steel Ingots

Another use of the acid process is the combination of the basic and acid processes. Steels made by this method are usually of the highest grade and the field for its usefulness covers almost as much area as that of the alloy steels for the war industry and special machinery. The analyses indicated in Table III do not show sufficiently the superiority of the steel they represent. The particular photomicrographs of all these steels, as well as those previously mentioned, should have been included to prove the truth of this remark. The description of the microstructure, however, does not fulfill the scope of the present paper and was ignored accordingly.

Basic Electric Steel Ingots

Within the last 10 years, the steadily increasing capacity of electric furnaces caused indirectly the production of larger quality ingots weighing from 2 to 10 and even more tons.

As far as the chemical anaylsis of basic electric steel is concerned, up to the present time the electric furnace has been more or less monopolized for melting all grades of alloy steel and used in the manufacture of carbon steels only in cases where quality was the guiding requirement.

Examples of the chemical composition of various ingot steels melted on a basic lined electric furnace will be found in Table IV. With the exception of Examples Nos. 1 and 2, all steel was made on arc furnaces.

Acid Electric Steel Ingots

Larger quantities of ingot steel are very seldom manufactured on an acid-lined electric furnace hearth. The acid furnace, however, is frequently used as in the combination with basic lined furnaces, the steel being desulphurized and dephosphorized either on basic open-hearth or basic electric furnaces and then transferred to the acid-lined furnace. Slag, sonims and gases are given opportunity to float to the top of the bath, making the steel much cleaner, tougher and stronger. Examples of the chemical composition of larger ingots used for the automobile and war industry will be found in Table V.

Conclusion

In the manufacture of large ingots, exceptionally strict specifications of chemical composition proved to be positively only of a theoretical value, if not useless, on account of the increased effect of segregation on soundness and pouring practice in general. The requirement of a clean steel, i.e., without slag or other non-metallic inclosures or impurities (sonims, refractories, etc.), as well as a quiet molten metal cast at a proper speed and temperature, should be more closely controlled than final analyses (except ladle tests). On the contrary, determinations of chemical analyses of inclosures, or the composition and quantity of occluded and absorbed gases, will be of a greater value and importance for the future improvement of the manufacture of ingots than just a few "points" of carbon or a little more manganese. This statement does not mean to eliminate chemical analyses; the correct opinion of a steel quality, however, can be obtained only by taking *both* factors—analysis *and* melting or pouring practice—into proper consideration.

Crane Facilitates Construction of Exposition Building

A crane which is credited with playing a prominent part in the rapid completion of the Palace of Agriculture, which is one of the four major buildings that will house the Sesquicentennial Exposition at Philadelphia, is here illustrated. The building is 500 ft. wide and 1000 ft. long. The contract was awarded to the Austin Co., Cleveland, last fall and the building completed on March 1.

The crane, named the Blue Goose, was employed in erecting the structural steel and in handling other materials. It is a Brownhoist No. 2 gas engine creeper truck crane with a 40-ft. main boom. A special feature is the 25-ft. gooseneck extension to the main boom, which was designed by Brownhoist and Austin engineers to facilitate the placing of roof lumber and other light material on top of a building four stories in height. The capacity of the main boom is 10 tons at 12-ft. boom radius. The gooseneck extension has a capacity of 1000 lb. The machine is operated by one man and is used for bucket, hook or magnet work and for driving piles. It is painted blue, the standard color for all Austin equipment. The gooseneck extension, also painted blue, suggested the name of "Blue Goose."

The 25-Ft. Gooseneck Extension Permitted the Placing of Material on Top of a Building Four Stories High. The machine was used effectively in building the Palace of Agriculture, which is one of the four major buildings that will house the Sesquicentennial Exposition

New Electric Blooming Mill Drive

Installed in Record Time at Donner Plant—Net Shut-Down Only 13½ Days—Motor on Site of Old Engine

RAPID installation of the new electric blooming mill drive put in operation last July by the Donner Steel Co., Inc., Buffalo, stands out as a unique accomplishment. The new drive replaces the 48 x 60 in. simple, twin-cylinder Macintosh-Hemphill engine formerly used in driving the 36-in. blooming mill. This engine has been in service since 1906 and was operated non-condensing, by steam furnished in part from a battery of coal-fired boilers in one boiler house and from blast furnace gas-fired boilers in another boiler house.

Since the blooming mill in this plant is most essential in the production of alloy and special steels made to customers' specifications, it was important that the change be made with a minimum shutdown. After carefully planning every step, and immediately upon receipt of the last car with electrical equipment from the factory, the mill was shut down on July 2, the old drive removed and the mill again put in operation with the new drive in its place on July 20. The time from the last ingot with steam to the first ingot with electricity was just 18½ days, (about 13½ working days, as the time spanned the July 4 shutdown.)

New Building Needed

The engine was typically located in one end of a lean-to building known as No. 1 Power House, which is adjacent to the blooming mill building and houses also the hydraulic pumps, boiler feed-water pumps, accumulators, air compressors and other power house equipment. This building, being narrow and served by a rather low 10-ton electric overhead traveling crane, was found entirely inadequate for the purpose of housing the new drive. It, therefore, became necessary to erect a new building of ample size, with adequate crane facilities, to serve the needs of the reversing motor and auxiliaries, in place of a portion of the existing lean-to over the engine.

Construction of the new building carried with it certain difficulties not ordinarily encountered in work of this nature. Operation of the mill, before the final shut-down, could not be interrupted, in spite of the frequent occasions for interference with construction. The large steam separator, together with steam piping and exhaust piping serving the engine, as well as accumulators, hydraulic pumps and electrical apparatus in and near the engine room and used in conjunction with the mill, had to be moved, to clear the site for foundations and walls of the new building.

Approximately 7 ft. wider than the power house lean-to, the east wall of the new building fell outside of the existing building. Foundation for this wall, on account of having to carry also the crane runway columns, had to be piled. Oak piles were driven to refusal by a pile driver specially designed to drive them in the limited space between the existing power house building and an adjacent brick boiler house stack.

While excavation and concrete work for the east wall were in progress the end wall of the old power house building, together with roof and east wall in the last bay just south of the engine, were removed to clear the site for foundation and end wall of the new building, and for the switchboard basement, which extends across the south end. Meanwhile, the brick wall separating the blooming mill building from No. 1 power house was removed in five bays opposite the engine, to expose the steel work of the mill building and to permit later the erection of a new partition wall, forming also the west wall of the new drive room.

Steelwork Erected Under Difficulties

After the east and south wall concrete foundations were in place, the erection of the steel work for the new building was started. Column extensions were added to the mill building columns for supporting the west ends of the drive building roof trusses, about 5 ft. above the eaves of the mill building. The east columns and roof trusses of the new building were then placed by use of a hand car on a track supported on the roof of the lean-to, and raised by a portable gin pole, also supported from the same roof. Sufficient space was not available to erect the steel work from the ground by using ordinary erecting equipment. The roof of the new building was then placed, which, with the exception of brick walls, virtually completed erection of the new structure over the top of the old building.

Two more bays of the old power house building, beginning at the south end, were then taken down. The mill building columns were reinforced on the drive side, and the new crane girders for the crane, to serve the new drive, were erected in two bays. A 75-ton open-hearth pit crane, overhauled and converted into a single-hook crane to serve the motor-drive building, was next placed on the runway in the two south bays. A fourth bay of the old building was taken down, which permitted erection of a third bay of the new crane runway girders. This procedure was carried on until the entire old building had been removed and the complete new runway erected. The engine was, in this manner, at all times covered by either the 75-ton crane of the new building or the 10-ton crane of the old power house, or both, if needed in the bay between them.

Tearing down the old building and subsequent erection of new members were done under cover of the roof of the new building, while the engine was operating on regular mill schedule. Use was made of the new roof trusses for fastening rigging used in dismantling and erection. Following this, the laying of brick for the east and south walls was started and erection of the switchboard gallery, followed by erecting switchboards and connecting wiring. Meanwhile, foundations for the north wall of the drive room were put in and the concrete work for the underground air ducts completed as far as possible.

New work up to this point was carried on around and over the top of the engine while operating, without a single shutdown except for the regular Sunday stops.

TIME is one of the most important ele nents in the operation of a steel mill. The word "delay" on the tally sheet is as a red rag to the superintendent. For that reason the story of how quickly a big replacement job can be done makes worth-while reading. Tearing out a heavy, cumbersome engine, blasting out its foundations, putting new foundations and motor drive in the self-same location—all within 13½ working days —is a feat done last summer in Buffalo. In this article A. L. Foell, chief engineer Donner Steel Co., tells how it was done.

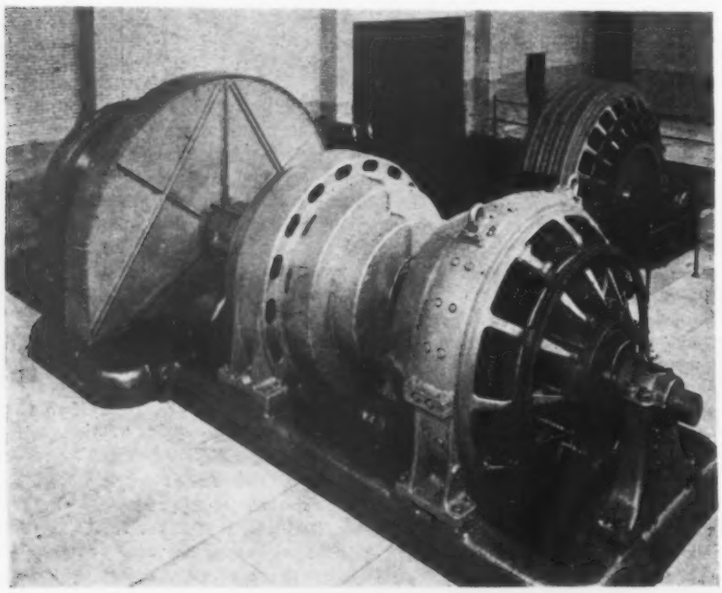
The construction work was carried on under more or less difficult conditions. The engine, being badly out of balance, put in vibration everything around it to an extent requiring stopping certain parts of the work at times, and more than extraordinary bracing of forms for concrete, scaffolds and various members of the building under construction. There were no switching tracks near the site to facilitate handling materials. A limited amount of space across the end of the building and along one side was available, in which construction work could be carried on.

Every preparation was made for the final shutdown, so that the change to the electrical drive could be made in the shortest possible time. A temporary construction track elevated on a trestle across the north end of the drive building, between the engine foundation and the north wall, was placed a few days before the mill was shut down, so that it could be quickly connected to a temporary spur track, also placed at the same time, across the mill from a track in the mold yard. This track was placed across over the mill tables while the mill was shut down. The trestle was provided, to make the north end of the engine foundation accessible for dynamiting. A Leyner concrete drill sharpener and a tempering furnace were installed temporarily near the site, to keep the drills in good condition. Lumnite cement was procured to expedite the foundation work.

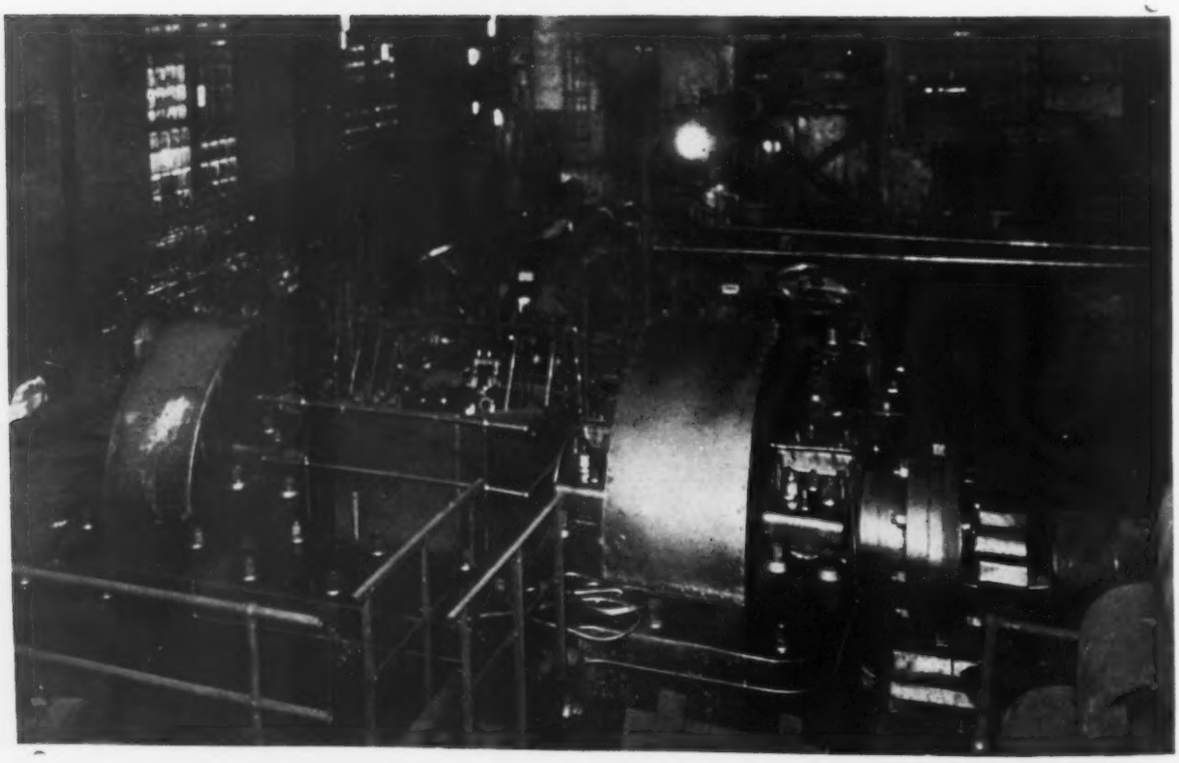
Tearing Out and Rebuilding

The engine with its auxiliaries and steam piping, weighing nearly 1,000,000 lb., was dismantled and removed completely in 22¾ hr. after shutting down. Drilling and dynamiting of the engine foundation for new foundations for the motor-generator set and the reversing motor was started simultaneously. The motor-generator set was placed across the south end of the engine foundation, sufficiently far away from the reversing motor to permit concentration on its foundation, so as to permit its completion earlier than that for the reversing motor.

Erection of the motor-generator set was started seven days after shutting down. This was followed by completing the concrete work, mostly poured with Lumnite cement, for the exciter set, slip regulator, conduit



At Left Is the New Motor-Generator Set with the Main Mill Motor in Background. Below is the old engine which was taken out; the shaft connection at right, leading to the blooming mill still farther to right (not shown) is in the same location as the motor drive shaft shown, in upper view, passing through the wall into the mill building. Another view of this electric drive appeared on page 59 of our Jan. 7 issue

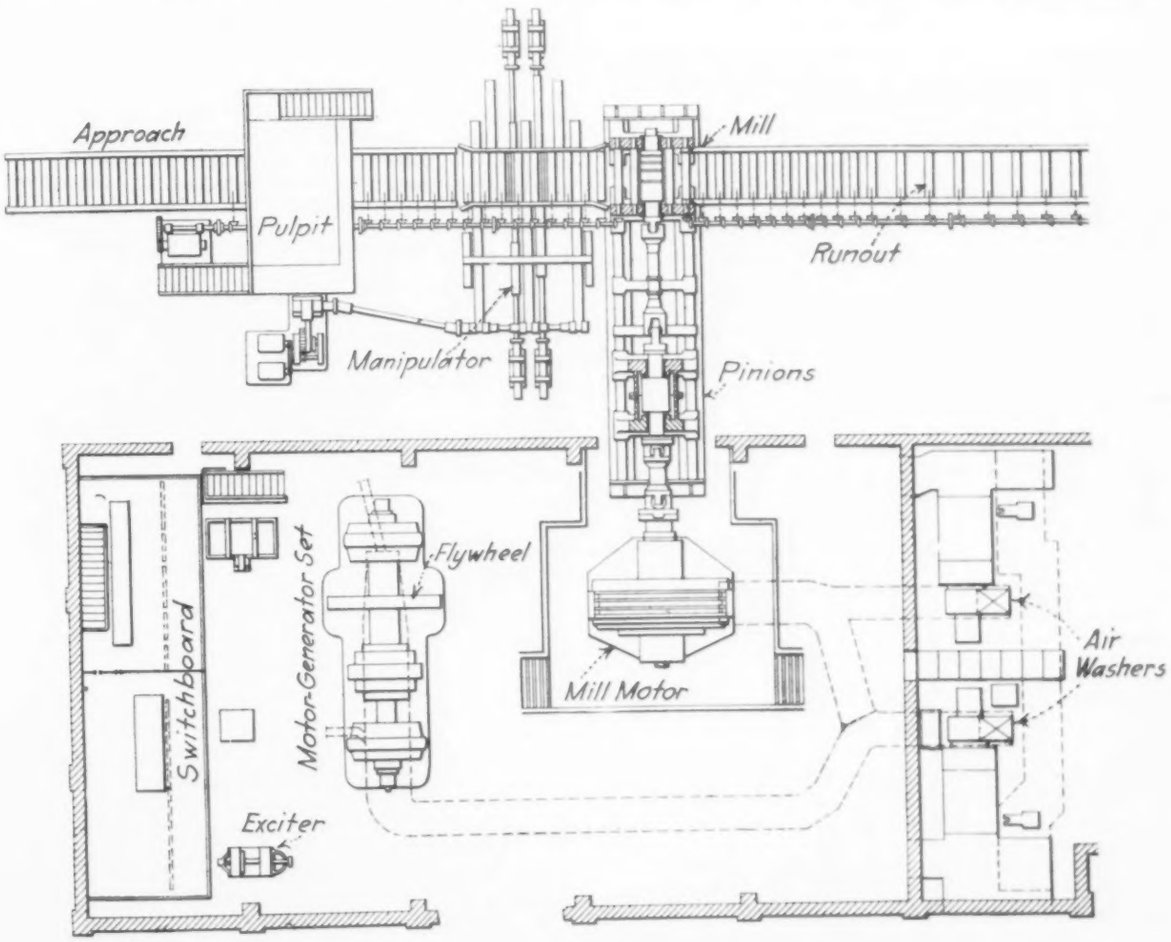


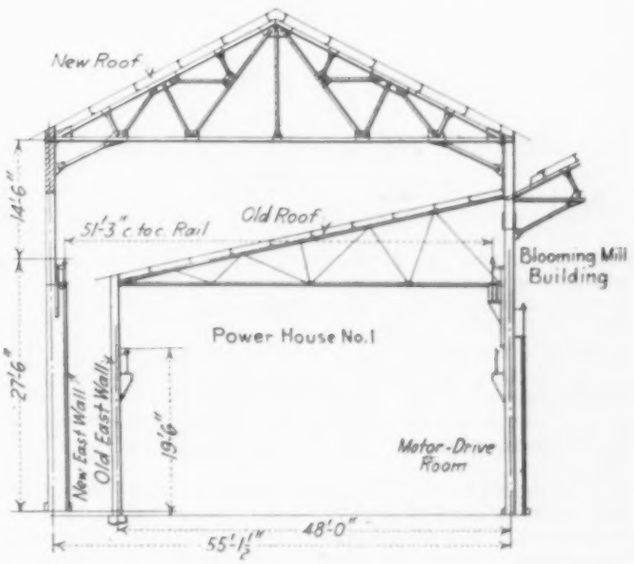
tunnel between switchboard basement and motor-generator set, and for the bus-bar cellar between motor-generator set and reversing motor. The foundation for the reversing motor was next completed. This permitted starting erection of the reversing motor 12 days after shutting down. The wiring, together with setting up of auxiliaries, was carried along as rapidly as possible, to permit turning over and adjusting the main units as far ahead of starting as possible.

In preparing the foundation for the reversing motor, the engine foundation was dynamited out to a depth of about 11 ft. Structural beams were anchored at this elevation, into the remaining existing foundation below, by six of the engine foundation bolts, which were shortened for this purpose. These extend into the existing concrete to a further depth of about 10 ft. Eight of the motor anchor bolts, not including the four principal bolts at the drive and thrust bearing end, were secured to these beams for bolting down the motor. The four bolts at the drive end bearing were anchored down through the new concrete into the old engine foundation below and fastened in the tunnels of the old foundation at a depth of about 20 ft. below the motor base.

New concrete for both foundations was poured of Portland cement up to about 15 in. of the top and finished with Lumnite cement concrete. The aim was to obtain a sufficiently hard surface to permit erection of equipment in the shortest possible time after pouring of concrete was completed. Erection of the motor-generator set and reversing motor was started about 26 hr. after their respective foundations were poured.

During the shutdown the mill machinery was completely overhauled, including certain changes in the roll





Above Is the General Layout of the New Driving Units, in Their Relation to the Blooming Mill in the Next Building. At right is shown the way the new motor-room structure was built up, over the old power house. The new crane runway is 8 ft. higher than the old and the span about 5 ft. greater

stand to permit the use of larger blooming rolls and new universal spindles between pinions and mill. The pinion housing was machine altered for new pinions of larger diameter, and equipped with new bearings designed for lubrication by splash from the pinion teeth. The pinion teeth, bearings and universal ends of lead and mill spindles are lubricated by oil from the bath in pinion housing, into which the pinion teeth dip.

A new operator's pulpit was erected in place of the old pulpit used with the steam drive. This pulpit, of plate and structural steel construction, is entirely inclosed. Steel sash with clear wire glass incloses three sides, with bullet-proof plate glass extending across the entire front, to give a full view of mill to the operatives and at the same time offer protection from flying scale. The pulpit is ventilated by washed air from the air washers.

New Equipment

The reversing motor consists of a single-unit shunt-wound machine operating on 750 volts d.c. current, having a speed range of 0 to 120 r.p.m. in both directions and having a momentary torque capacity of 1,050,000 lb-ft. Its continuous capacity, based on 50 deg. Cent. temperature rise, is 4000 hp. It is direct connected to the pinion housing of the mill through a universal lead spindle. The motor is semi-inclosed and is ventilated by washed air.

The motor-generator set consists of two 1800 kw., 50 deg. Cent. rating 750-volt d.c. shunt-wound generators in parallel, driven by a 3000 hp., 50 deg. Cent. rating, 500 r.p.m. synchronous speed, 2200-volt, 3-phase 25-cycle, slip ring induction motor. A 40-ton flywheel is mounted between the induction motor and one of the generators, while the other generator is direct connected to the motor on the opposite end. These units are all supported on a common base plate and are all semi-inclosed for the purpose of forced ventilation by washed air, with provision for self ventilation when required.

Excitation for the d.c. generators and the reversing motor is furnished by a 100-kw. motor-generator set running at 750 r.p.m. Three 75-kva. single-phase transformers with 115-volt taps for starting are used in stepping down the 2300-volt current to 230 volts for power on the auxiliaries. A liquid slip regulator is used for automatically regulating the amount of resistance in the secondary circuit of the induction motor, to permit an exchange of energy between motor and flywheel. This regulator is arranged for use in starting the set and for dissipating the slip energy.

Washed air is furnished by two air washers each having a capacity of 30,000 cu. ft. of air per min. Normally one washer furnishes air for the reversing motor, while the other is used in ventilating the motor and generators of the motor-generator set. Inter-connecting air ducts leading from these washers permit the washer normally on the motor-generator set to ventilate the reversing motor, in case of trouble with the other unit. Washers, fans and pumps, located in No. 1 power house, just outside of the motor drive room, are arranged to take in outside air or to recirculate air from the motor room, or both, as desired. The starting controls for motors driving the fans and pumps are interlocked with the main starting control on the large units, so that the latter cannot be put into operation without forced ventilation.

The bearings on the reversing motor and motor-generator set are ring oiled, supplemented by a gravity oil circulating system to insure ample and fresh oil at all times. The flywheel and reversing motor bearings are arranged and piped for water cooling, in case of emergency.

Switchboards and equipment are placed across the south end of the motor drive room. The low-voltage starting, contactor and instrument panels for the reversing equipment, together with automatic switchboards for the mill auxiliary motors, are on the main motor-drive room floor. The high-tension oil switches are placed on one end of a gallery over the switchboards. The d.c. resistance, mounted on racks, is placed on the other end of this gallery. The 75-kva. single-phase transformers and a series transformer are placed in a cellar under the switchboard, as a protection against fire in case of the loss of one of these.

Operates with Fewer Men

Operation of the reversing motor is entirely in the hands of the roller through a manually controlled master placed in the pulpit. This master, together with a single similar master controlling the approach and delivery tables on the mill, is so placed as to enable him to operate the mill and tables with his right hand. Another similar master conveniently placed gives him control of the screw-down with his left hand. The manipulator is hand operated from the pulpit by another operator. This arrangement allows the operatives freedom in operating the mill in either a standing or sitting position and makes possible the operation with two men, where formerly three were necessary.

The equipment has an estimated monthly capactiy in rolling 21½-in. square ingots into 4 in. x 4 in., 5½-in. x 5½ in. and 9 in. x 9 in. blooms of 35,000, 50,000 and 62,000 tons respectively.

The complete electrical equipment was furnished and erected, including wiring, by the General Electric Co. The new universal spindles, pinions and bloom rolls were furnished by the Mesta Machine Co., Pittsburgh. Structural steel for the building was furnished and erected by the Lackawanna Steel Construction Co., Buffalo. The necessary piling was driven by the Great Lakes Dredge & Dock Co., Buffalo. All other work, including rearranging of equipment, dismantling of engine, foundations, brickwork and miscellaneous work, including engineering, was executed by the Donner organization.

Phosphorus in Wrought Iron by Different Puddling Processes

An investigation recently completed by H. S. Rawdon and Samuel Epstein of the Bureau of Standards had for its purpose the study of the effect of phosphorus, one of the ever-present impurities in wrought iron, upon properties of the finished iron as made by different puddling processes. Recently, mechanical puddling processes have been advocated and used to a considerable extent to replace the time-honored hand-puddling method, on account of the high labor costs of the latter. Very little has been published on the properties of the wrought iron made by these newer processes.

Phosphorus in wrought iron is usually regarded with some concern since it embrittles the iron or makes it "cold short." The phosphorus is contained in both the iron matrix and the slag threads to which the wrought iron owes its characteristic "fiber." Only the phosphorus in the iron matrix, however, affects the properties of the metal. Mechanical puddling appears to be more effective in reducing the phosphorus content to a lower figure than is hand puddling. Experiments were carried out on wrought iron made by each of the two methods on a "split" heat of pig iron, the two parts of the heat being refined by the two processes, hand and mechanical puddling, respectively. For certain purposes, such as drill pipe for which a "stiff" material is needed, a certain percentage of phosphorus in the iron is desirable. The amount, in such a case, is usually considerably higher than that in good quality bar iron, for which the total phosphorus ought not to exceed 0.15 per cent but slightly.

The investigation was not extensive enough to warrant any sweeping conclusion concerning all the merits of wrought iron made by the two processes. However, nothing was noted which would show that wrought iron made by hand puddling cannot be equaled by mechanical puddling if properly carried out.

Centrifugal Pipe from Sand Molds

How the "Sand-Spun" or "Mono-Cast" Product Is Made in a New Plant—Details Covering the Molds, the Sand and the Finished Product

MONO-CAST is the trade name for the cast iron pipe made centrifugally in refractory-lined molds by the American Cast Iron Pipe Co., Birmingham. In this article the subject is dealt with under two heads: First, raw materials; second, equipment for converting these into a finished product.

Raw Materials

The ordinary grades of pig iron available in the Birmingham District are used and as there are no risers or gates, the amount of return scrap is nominal. Standard by-product coke is the melting medium, with modern cupola practice used in converting the iron to the fluid state. The weighed charges of carefully selected iron are introduced into the cupolas by a mechanical charging machine and the operation of the cupola is controlled by recording pressure gages, volume gages and pyrometers.

In the production of the refractory molds, which are the basis of the centrifugal process, red loam molding sand from the Montgomery, Ala., district is used as a base and to this is added a sufficient amount of washed silica sand to produce a molding sand of the proper specifications. This sand is carefully checked for the amount of bond, permeability, moisture and grain size.

The chief bond of the molding sand comes from the red loam, but yellow field clay, fire clay, or glutrine may be used to give additional bond to the sand in the green state. The sand, when rammed in the flask, is faced with ordinary pipe foundry facing, made from nut coke which has been pulverized to the consistency of flour. This is the common material used as pipe mold facing and comes in the form of a semi-tempered material. The sand used for making the socket cores, which form the middle of the bell of the pipe, is a very fine grained washed silica sand, such as is used in making oil cores for radiator castings. This sand is mixed with linseed oil, which is the binder.

Tar is the only other material used and this is bought on a specification governing its content of moisture and free carbon. It is pumped from large tank cars in which it is delivered into storage tanks and removed from these to the dipping vats as required.

Making the Refractory Molds

The equipment required for the operation of a Mono-cast centrifugal pipe foundry consists of the following: Mono-cast pipe is of unit construction, that is, one pipe to the flask. The flask, which is made of cast iron, is machined on all points so as to make it possible to do rapid work. It is necessary to ram the sand mold perfectly concentric with the spinning surfaces of the flask.

As shown in the plan of the new plant, there are 3-way ramming stations at the positions designated as No. 1. The empty flasks come down the run as indicated at No. 2 and are received on a tilting table in the run which delivers them into the vertical position on the ramming stations as shown at No. 3. The flasks are handled three at a time and these two ramming stations are used to alternate the work so that, while they are ramming on one station, they are completing the rest of the work and making the change on the other station.

Once the flasks are in the vertical position and properly located on the ramming tools, the three patterns are lowered into the flasks. These patterns are handled from above by a stationary pattern hoist. The pneumatic ramming machines are then moved into position by mechanical means from above and lowered into the individual flasks. The sand delivery chutes are placed into position and the ramming operation proceeds throughout the length of the mold, which is about 16 ft. long. The time consumed in ramming is about 1-½ min.

The patterns are drawn, three at a time, from the molds, the molds are lifted off of the ramming steels by a hydraulic lift and the blacking is applied to the face of the molds while in a vertical position. They are then returned to the horizontal position by the tilting table and are ready to move forward on the flask run, as indicated at No. 4. The flasks then proceed to No. 5 where they are picked up by an overhead crane No. 6 and delivered to the casting machines at No. 7. In this operation the flasks are handled two at a time by the special device attached to the crane.

Casting the Pipe

The top half of the Mono-cast pipe casting machine, as shown at No. 8, is elevated to sufficient height to allow the flask to roll in sidewise. The machine is then closed, the motor is attached to the flask by a quickly detachable clutch and the proper amount of iron is placed in the pouring ladle, as shown at No. 9,

WHEN the process of making cast iron pipe centrifugally in a refractory mold was first announced, it was known as sand spun pipe. The first announcements appeared in THE IRON AGE, *June 5, 1924, where a preliminary description of the process was given, and in some editorial comment on the development in its issue of March 20, 1924. This article is a description of the developments which have taken place since then, resulting in the perfection of the process and the building of a large plant at the works of the American Cast Iron Pipe Co., Birmingham. The process is named the "Mono-cast" process.*

The inventor of the process is W. D. Moore, president of the American Cast Iron Pipe Co. He has been closely connected with the foundry business since 1908 and has been president of the company for the past two years. He was born at Hannibal, Mo., April 17, 1882, and was educated in the public schools at Galion, Ohio, being graduated from the high school there in 1900. In 1908 he became connected with the present company as an engineer, advancing from that position to the presidency in 1924.

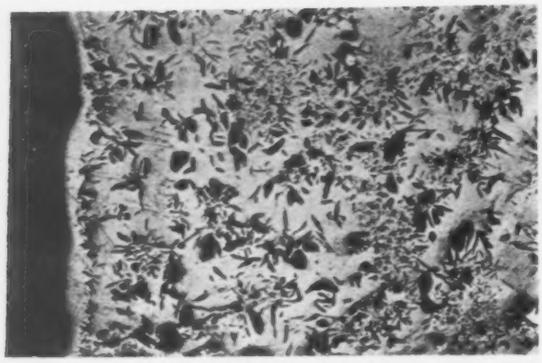


Fig. 1(a)

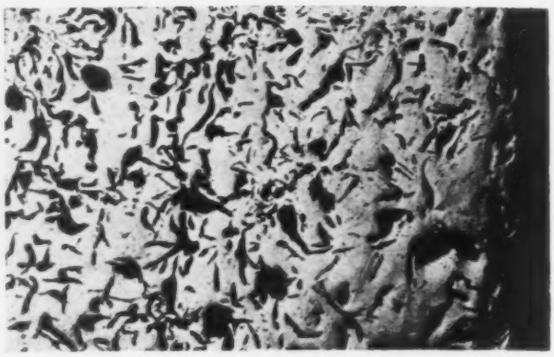


Fig. 1(b)

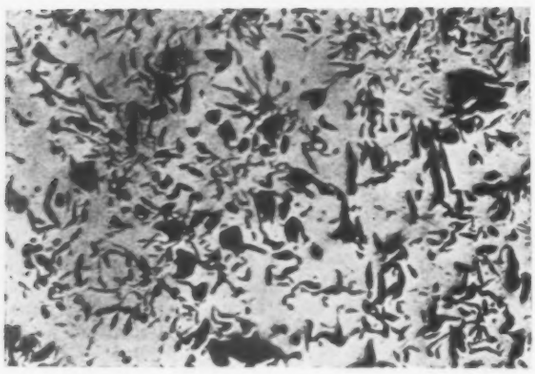


Fig. 1(c)

Photomicrographs of Comparative Structure Cast Pipe: Fig. 1 shows mono-cast structure edge (c); and Fig. 2 (a, b and c) shows the The chill on the outside (sections a) is the mono-cast but the graphite formation is not so coarse and has not the tendency to cast. The inside (c) shows the chilling effect shows no tendency to

from the large ladle on monorail trolley No. 10. The machine is then inclined to the proper angle with reference to the horizontal and the pouring operation proceeds. Immediately the metal is poured in the mold, it is set spinning and the iron is placed on the wall and held there in the form of a tube until it is sufficiently set to retain its shape when the machine is shut down.

The mold, with a finished pipe in it, is rolled on through the machine and takes the position shown at No. 11. From this station it is moved to No. 12 where the end trimmings are removed from the flask and the socket sand removed from the bell end of the pipe. All of this takes place within 10 min., including the casting and spinning operation.

The flask, with the sand and pipe in it, now passes to the stripping machine as shown at No. 13, which is a three-way machine built on a rather abrupt incline. The flasks are placed on a tilting table and tilted to the incline in which position they are held while the sand is being removed from the mold. The flasks, with the pipe in them, are returned to the horizontal position by the tilting table and the pipe puller No. 15 removes the pipe from the flasks three at a time and deposits them on the run at No. 16. In this run there is a conveyor which immediately conveys the pipe into a cooling oven at No. 17.

Cooling and Cleaning

This cooling oven is equipped with a slow-moving conveyor which gradually rolls the pipe through the oven, where it is kept under temperature control for approximately 40 min., and until it has reduced in temperature to at least 500 deg. Fahr., at which time it is ready to be removed from the cooling oven and enter the cleaning department as shown at No. 18.

When the pipe is cleaned it passes to station No. 19, where it is picked up by a small hoist, and passes to station No. 20, where it is lowered into a bath of tar and is held in this bath a sufficient length of time to take a proper coating. The bath itself is under temperature and chemical control. The pipe then passes to No. 21 where they are permitted to drain free of

A Mono-Cast Centrifugal Machine for Making 16-Ft. Pipe. It is in the position which it assumes when revolving. The upper half lifts up and the flask containing the refractory-lined mold rolls into the machine in a horizontal position

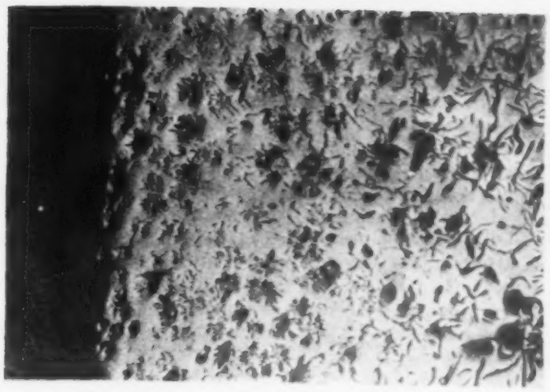


Fig. 2(a)

Fig. 2(b)

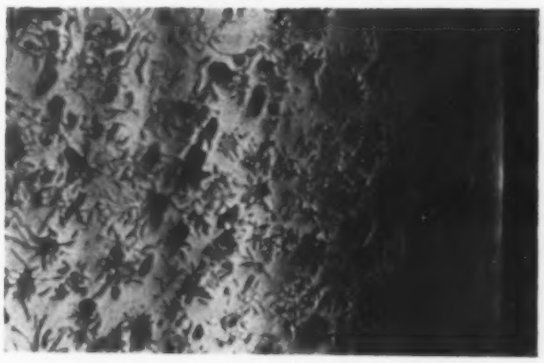


Fig. 2(c)

of Mono-Cast Centrifugal Pipe and Sand at outer edge (a) middle (b) and inner same relative positions in a sand cast pipe. much deeper on the sand cast pipe than on in the middle (sections b) of the mono-cast form a continuous network as in the sand of the core in Fig. 2 while the mono-cast change in this section

surplus tar and then pass to No. 22, where they continue to cool. They then pass to station No. 23, where they are lowered to the pipe run again and proceed to the hydraulic testing press No. 24. Gas pipe are not coated but after being tested in press No. 24 they pass to press 25 where they may be given an air test of 25 pounds air pressure under water. From here they pass to station No. 26, where they are weighed and the individual weight marked on the outside and inside of each pipe. From here they pass to No. 27, where they are picked up by a monorail hoist, or truck, and distributed on the loading yard as a finished product.

The Empty Flasks

From station No. 13 the empty flasks proceed down the run to No. 28 and then to transfer car No. 29 and are taken across, as shown by the arrow, to flask run No. 2, and then proceed through the ramming station again in their regular turn.

In this shop are two units which operate entirely independent of each other, except that they have the same sand handling and preparing machinery, and the same source of iron supply.

Sand Regeneration

The tempering and regenerating of the sand starts at station No. 14 which is the dry storage bin where the sand is accumulated as it is removed from the flasks during the stripping operation. At No. 30 there is a shake-out sand storage bin for the opposite half of the shop and this serves in the same way as No. 14; both are located at the center line of the shop.

Underneath these bins there is a reciprocating sand conveyor operating from the bins to No. 31. This conveyor takes the sand from the bins No. 14 and No. 30 at a predetermined rate, which is controlled by slide valves and the stroke of the reciprocator. As the sand comes from these bins into the reciprocator it is almost, if not entirely free of moisture, and at a temperature of approximately 125 deg. Fahr. As it is moved along by the reciprocator between stations No. 14 and No. 32, clear water is added, which is the first addition to bring it back to molding temper.

At station No. 32 is the make-up sand in a bin which is equipped with an automatic feeding device operated by the stroke of the reciprocating conveyor. This feed

Mono-Cast Centrifugal Pipe Split Endways to Test for Uniformity of Section, Inclusions, Blow Holes, etc.

is adjustable so that with each stroke of the conveyor one can introduce a definite quantity of make-up sand. In this way a uniform distribution of the new make-up sand into the total body of sand is effected. As the sand continues to move from No. 32 to No. 31, by means of the conveyor, it is thoroughly mixed and additional water is added, if required.

At No. 31 the sand is delivered by the reciprocating conveyor to a belt conveyor which is running at an angle of about 30 deg., and which elevates the sand from the basement of the shop to a point above the working floor level and delivers it into a duplex paddle mixer at No. 33. In passing through this mixer, the sand is thoroughly mulled and, if any additional water or clay wash, or any other material is to be added, it is added at this station, so that as the sand leaves this mixer there are no more additions to be made, except the final addition of water to make up any error in moisture that may be found later.

The sand is delivered from the end of the paddle mixer at No. 34 onto a belt conveyor which is operating at an angle of approximately 30 deg. This belt elevates the sand to station No. 35, where it is discharged off of the end of the belt onto a vibrating screen which mixes and aerates the sand and delivers it onto another belt conveyor which is operating at an angle of approximately 30 deg., and the lower end of this belt conveyor is approximately 6 ft. above the shop floor level. This belt works from No. 35 to No. 36 and, on account of the inclination, station No. 36 is well up into the third floor of the shop.

As the sand is carried from No. 35 to No. 36, test samples are taken and a check is made for moisture, permeability and bond. In addition to this the screen test is made from time to time to keep the grain size under control.

Along this belt conveyor there is equipment for adding water to the sand, should the test indicate the necessity. In actual practice the sand is run a little on the dry side coming through the mixers No. 33 and No. 34 to avoid ever having it too wet as it comes onto the belt at No. 35.

As the sand arrives at No. 36 it passes onto another vibrating screen which further mixes and aerates it, and breaks up any accumulation of moisture as a result of applying water to it on the belt. The sand then drops into a circular revolving bin, No. 37, where there is a nominal storage of tempered sand.

The bottom of this bin is equipped with an automatic feeding device so sand can be delivered to cross belts No. 38 and No. 39 simultaneously or separately. From station No. 38 to No. 40 there is an inclined belt conveyor elevating the sand from the bottom of bin No. 37 up into a chute which delivers it to bins 41 and 42. As the sand travels from No. 38 to No. 40 on the belt it is again sampled and tests run for moisture. This belt is also equipped with water facilities so as to add moisture if found necessary.

Sand bins No. 41 and No. 42 are of the revolving type with automatic feed at the bottom. These bins are located immediately over the ramming station as shown in the plan, and it is from these bins that the rammers take the sand and deliver it into the flasks as required during the ramming operation.

The raw materials, such as sand, facing, clay, etc., required in the operation of this plant are stored in the basement of the shop, as noted at No. 44. At No. 45 there is a pair of vertical skip hoists which handle a half yard bucket from the basement floor of the building up through the first floor and delivers their charges into the Simpson mixing mills on the second floor, as shown at No. 46.

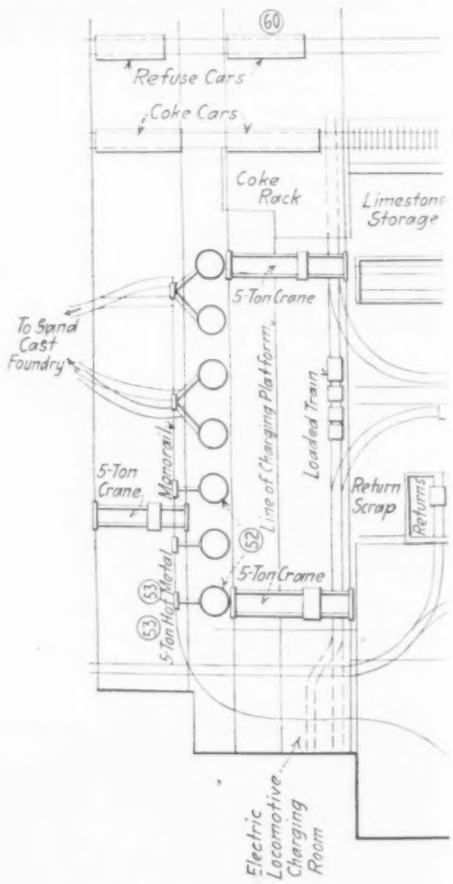
The raw materials are taken from the storage bins in the basement and mixed in predetermined proportions in these skip hoist buckets and, when the operator running the mixers is ready, he operates the hoists and delivers the charges into the mills where it is thoroughly mulled, and receives the proper amount of moisture to bring it to temper. It is necessary to maintain two mixtures of sand. One is for the make-up sand used in connection with the regular molding sand, and the other is the oil sand mixture used for making the socket cores.

Preparing and Using the Facing

A facing is prepared for the refractory molds and provides a parting between the sand and the iron during the casting, and to cause the sand to peel off of the casting leaving a clean, smooth surface. This raw material is stored in the basement at No. 51 where there is a mixing machine similar to a concrete mixer in which the facing is mixed with water and clay, with the addition of any other materials necessary to make the facing of proper consistency, such as glutrin, syrup or similar binders. The liquid facing is discharged from the mixer into a container from which it is picked up by means of a centrifugal pump and is circulated through a pipe system with delivery at the ramming station where it is always available for facing the molds. The facing operation is accomplished by a special dasher rigging which is inserted in the mold and through which a predetermined quantity of facing is poured. This spreads itself over the surface of the mold and drains into a receptacle at the lower end of the mold. The facing liquid is kept in constant agitation so as to prevent settling.

Handling the Hot Metal

In carrying the hot metal from the melting plant into the casting bay, the cupolas at No. 52 deliver it by means of tilting spouts to a ladle, three of these being available at all times. By means of an I-beam



Plan of the New Plant for Melting and Pouring Mono-Cast Centrifugal Cast Iron Pipe Built by the American Cast Iron Pipe Co., Birmingham.

trolley system, the ladles, holding about 4 tons of hot metal, are delivered to the pipe plant. The pouring ladles on the individual machines are filled from these large ladles with the proper amount of metal for the pipe being cast.

A complete record of the temperature of the metal from the time it leaves the cupolas until it enters the pipe machines is kept and the temperature is carefully regulated. Standard test bars, 1x2x28 in., are poured, one pair from each 3 hr., or fraction thereof, of the operation of the cupola. These bars are broken in a standard recording transverse testing machine and after breaking are used for complete chemical analysis. All raw material is also carefully controlled by chemical analysis.

Capacity of the New Plant

The new plant is capable of being operated 24 hr. per day and has a nominal capacity of 50,000 ft. of centrifugally cast pipe per day, the range of sizes including 4 in. to 12 in. inclusive, with the ability to put any two machines in the shop on any given size. The pipe machines, and all equipment connected therewith, are adjustable and interchangeable.

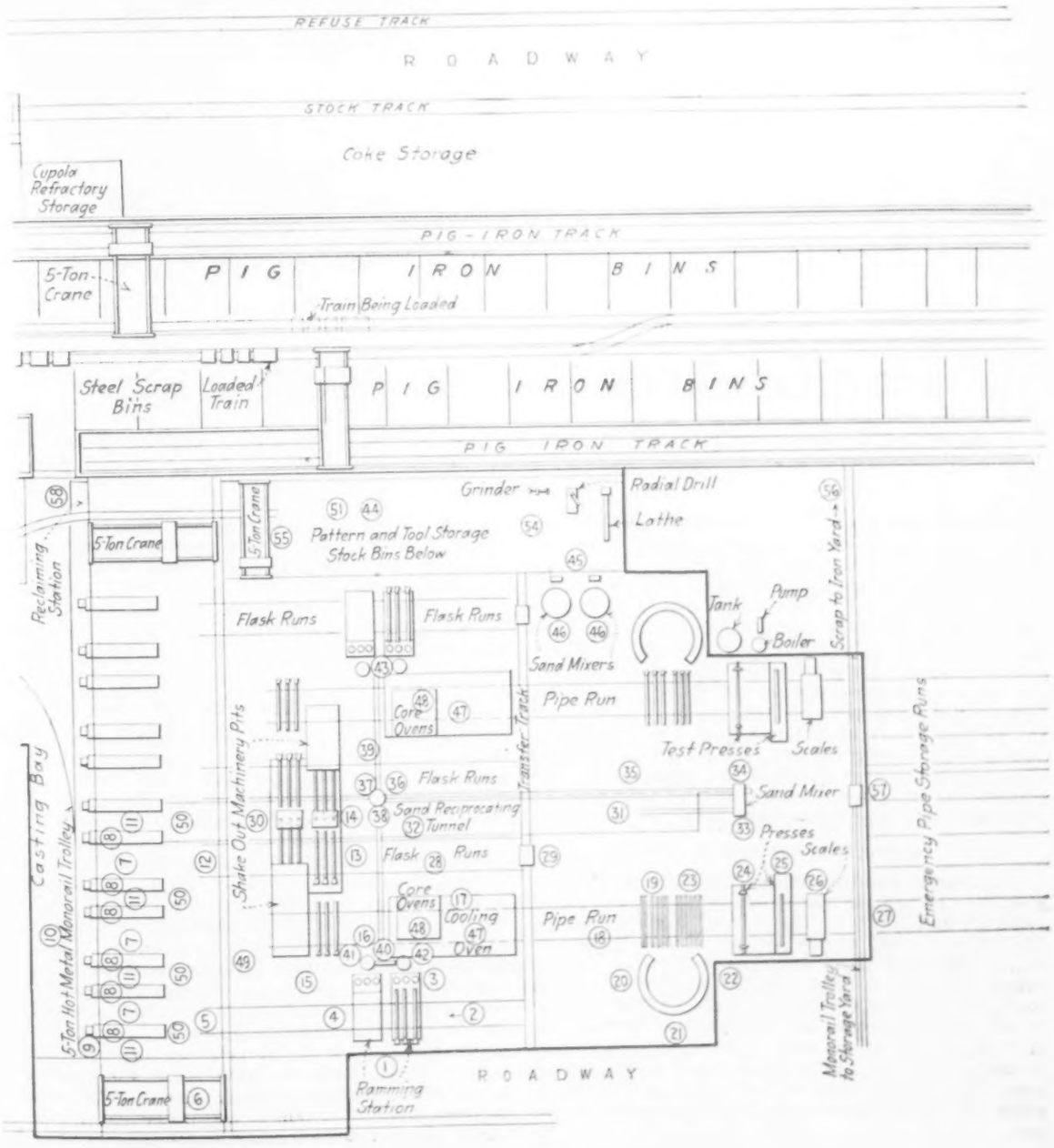
A Mono-cast pipe is described as a striking casting in appearance, both its outside and inside surfaces clean and smooth, the bead and bell true to pattern and the casting entirely sound and free from gates and fins. The metal is described as showing a gray iron fracture with a fine, close grain on the outside of the pipe changing gradually to a normal medium grain on the inside. There are no surface pittings on the outside or dross inclusions on the inside.

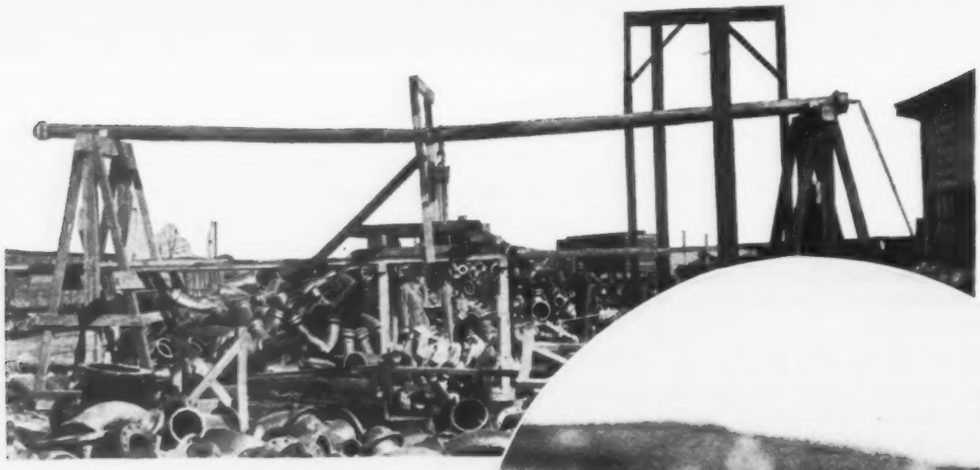
The tests made are claimed to show that this pipe has a 40 per cent better resistance to hydrostatic pressure than the ordinary sand cast material made by the company by the sand mold process, and a 20 per cent greater value in withstanding shock.

The direct costs in single shift will be but little different from the costs in continuous operation, according to the calculations of the company. As any pair of machines can be operated on any size and as it only takes a short time to change sizes, the shop can readily be arranged to take care of any trend of the market toward any one or two sizes. As there is no body core such pipe is cheap to make on that account and it is made in wall thickness as desired.

The advantage of heavy wall thickness may be listed as long life against corrosion, greater solidity and strength under ground, less likelihood of breakage in handling and greater security in tapping. These advantages are pointed to as real and important.

From the laborer's standpoint, the new process is a great relief. The new shop is cooler in summer and warmer in winter and much cleaner. Practically no





Two stages of cross bending test of Monocast Centrifugal pipe line

hand labor is used as the machines do practically everything and men are now only employed as operators, instrument handlers, etc. The quality of the product depends more on the efficient maintenance of the machine than on any other factor. For this reason quality is much more easily maintained than when it depends on the skill of a laborer.

The developers of this new process believe that there is a demand from the public for a different product. Where the permanence of cast iron is desired for a cost comparable to that of a substitute—where the use of a smaller safety factor is permissible—this new type of pipe provides the product desired. In view of the excellent physical properties, the moderate reduction in wall thickness involved is believed to be justified under the usual service conditions.

Pacific Area Takes More Steel

Imports of Oriental and South American Countries 55 Per Cent Heavier Than in 1913—Japan Is Heaviest Buyer

WASHINGTON, April 13.—The movements of iron and steel in the Pacific area, including Japan, China, the Philippines, Australia, Chile and Peru, are shown in a trade bulletin prepared by Marshall Teel Jones, assistant chief Iron and Steel Division, Bureau of Foreign and Domestic Commerce. Statistics for Hongkong are given separately. Figures deal with the period, 1913 to 1924, although in some instances they go back to 1912. The bulletin discloses the potential steel consuming power of the Pacific area and the part the United States has played in that market. Japan is the most prominent steel consuming country of the entire area, while China, Chile and Peru follow in the order named. All of these countries are in the process of industrial development, and none of them has tariff preferences.

Imports 2,900,000 Tons in 1924

The Pacific countries imported a total of 2,921,597 gross tons of iron and steel products in 1924, as against 1,884,623 tons in 1913. The United Kingdom supplied 905,220 tons, which was 24 per cent of its total exports of iron and steel to all countries in 1924; the United States furnished 531,544 tons, or 30 per cent of its total iron and steel exports; Germany, 288,519 tons, or 18 per cent of its total; and Belgium, 409,175 tons. In 1913 14 per cent of the total exports of iron and steel products from the United States went to the Pacific area. Japan alone imported 1,628,316 tons in 1924, of which the United States supplied approximately 22 per cent.

The six countries mentioned and Hongkong contain 527,600,000 inhabitants, or 28 per cent of the world's population, while the four leading steel producing countries, the United States, the United Kingdom, Germany and Belgium, have only 13 per cent of the population and occupy only 5.7 per cent of the available land area, compared with 14.5 per cent for the Pacific countries dealt with.

Per Capita Consumption Still Low

"During 1924 there were 2,921,597 gross tons of iron and steel products imported into these countries (the figure for Peru being for 1923)," Mr. Jones states. "Adding to this, 284,669 tons of steel ingots and castings produced in Australia and 550,000 tons produced in Japan makes a total per capita consumption of only 0.0077 tons (17.25 lb.). By taking just the production of rolled iron and steel products in the United States, 28,086,435 tons for 1924, minus exports of 1,805,153 tons, plus imports of 556,733 tons, the net consumption exclusive of the pig iron produced which is used for purposes other than steel making, is 26,838,015 tons. Allowing for a population of 113,493,720, this gives a per capita annual consumption of 0.2365 tons (529.76 lb.) for the United States, which is 30.71 times the per capita consumption of the countries under consideration. These countries, taken as a whole, show a steadily increasing importation, in spite of the increase in home production taking place in Japan and Australia. It is therefore quite possible that within the

next decade these countries will double or treble their consumption, a large part of which will probably be represented by imports."

Heavy Increase in Plate and Sheet Imports

Of the imports of pig iron in 1924, Japan took 438,437 tons, most of which came from India and China. Of bars and shapes, amounting to 639,703 tons, imported into the Pacific area in 1924, Japan took 301,702 tons; China, 134,235 tons; Australia, 94,102 tons; Hongkong, 45,925 tons, and Chile, 41,693 tons. These products were used for housing and industrial purposes and repairs, along with railroad and other work, especially in Japan following the 1923 earthquake. Imports of plates and sheets, amounting to 713,151 tons in 1924, showed an increase of 180 per cent over 1913. The phenomenal increase in this class of importations is accounted for by the fact that China doubled her imports and the other countries all showed gains. Of the total imports of plates and sheets in 1924, Japan took 420,057 tons; Australia, 163,348 tons, and China, 64,232 tons. Mr. Jones points out that Japan has undertaken to corrugate the plain black sheets and to do the galvanizing of both the plain and corrugated, claiming thereby to effect a saving over the imported galvanized articles. Therefore the importation of black steel sheets has increased and a decrease is noted in takings of galvanized sheets. The increased use of both black and galvanized sheets in the manufacture of articles such as pails, cans, gutters for houses and a great variety of products which were formerly imported, Mr. Jones states, accounted for a part of the larger tonnages, as it was found that these articles could be made in China and Japan out of sheets and sold at a lower price than the imported ones, owing to the cheap labor there.

Imports of wire rods and strip steel increased 6.75 times from 1913 to 1924, from 13,290 to 90,030 tons. The large increase in imports of tin plate, amounting to 118,436 tons, or 138.5 per cent, with a total in 1924 of 203,947 tons, is accounted for by the growth of its use in industry and for the manufacture of household articles. Of the 1924 imports of tin plate in 1924,

Imports of Iron and Steel Into the Leading Pacific Countries
(Gross Tons)

Product	1913	1924	Increase	Decrease
Pig iron and ferroalloys.	337,547	466,874	129,327	.....
Ingots, bloom, etc.....	18,405	9,955	.....	8,450
Hoops and bands.....	19,561	26,357	6,796	.....
Scrap	89,558	163,595	73,037	.....
Bars and shapes.....	466,501	643,162	176,661	.....
Plates and sheets.....	186,935	523,364	336,429	.....
Wire rods and strips..	13,290	90,030	76,740	.....
Galvanized sheets.....	200,819	173,820	.....	26,999
Tin plate.....	85,511	203,947	118,436	.....
Tubes and fittings.....	94,193	121,305	27,112	.....
Wire	140,085	120,825	.....	19,260
Wire rope	2,670	6,424	3,754	.....
Barbed wire	4,391	11,549	7,158	.....
Nails and tacks.....	42,487	92,041	49,564	.....
Screws, bolts, etc.....	6,379	3,152	.....	3,227
Rails and accessories..	143,001	206,327	63,326	.....
Fabricated struc'l steel.	25,888	23,417	.....	2,471
Castings	327	426	99	.....
Miscellaneous	7,075	35,027	27,952	.....
Total	1,884,623	2,921,597	1,096,381	60,407

All of the figures in the table excepting for Peru are for 1924, but owing to the fact that Peruvian statistics are not yet available for that year, those for 1923 have been substituted.

Japan took 70,872 tons; Australia, 52,090 tons; China, 53,597 tons, and Hongkong, 16,276 tons. Of the 235,324 tons of rails and accessories imported in 1924, Japan took 106,607 tons; China, 56,435 tons, and Chile, 38,324 tons.

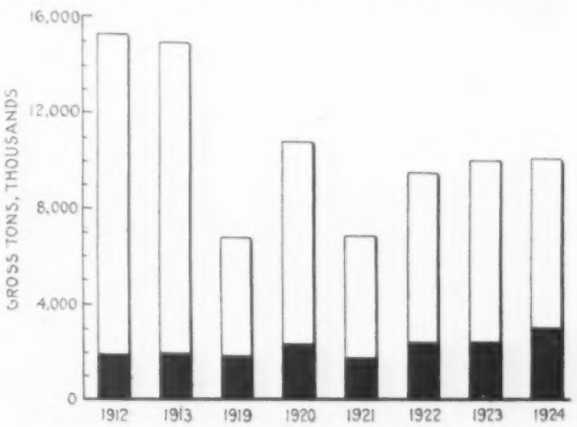
United States Supplied 22 Per Cent of Japan's Imports

Mr. Jones places production of pig iron in Japan at 350,000 tons and of steel ingots and castings at 550,000 tons in 1924, as against 56,000 tons and 13,000 tons, respectively, in 1913. The United States supplied 21.8 per cent of the total iron and steel imports into Japan in 1924, as against 11.8 per cent in 1913, while the United Kingdom furnished 22.5 per cent in 1924 and 33 per cent in 1913. Germany supplied 13.1 per cent in 1924, against 26.1 per cent in 1913, while Belgium provided 10.5 per cent in 1924 and 7.4 per cent in 1913. Of the 968,658 tons of bars, rods, plates, sheets, wire, tubes, etc., imported into Japan in 1924, the United Kingdom supplied 315,929 tons; the United States, 297,859 tons; Germany, 175,385 tons; Belgium, 151,090 tons.

China imported 548,790 tons of steel in 1924, of which 115,409 tons consisted of iron and mild steel bars, an item which predominated for that year as well as for 1920 and 1913, but nearly every one of the 19 items listed by Mr. Jones showed a steady rise, tin plate standing out notably with 53,597 tons in 1924. While the United Kingdom led the other countries in 1913, holding 29.3 per cent of the Chinese trade, in 1920 the United States held 42 per cent, giving way, however, to Belgium in 1924, which led with 30 per cent. Imports into Australia in 1924 totaled 445,258 tons, coming chiefly from the United Kingdom owing to a preferential tariff.

Belgium Leads in Exports to Chile

Of the suppliers of the 188,419 tons of steel imported into Chile in 1913, the United States sent 36.3



Total Iron and Steel Exports of the United States, United Kingdom, Belgium and Germany, Compared With Imports From All Countries Into the Pacific Group, Shown by the Shaded Areas

per cent, the United Kingdom 26.2 per cent, Germany 19.2 per cent, and Belgium 18.3 per cent. But in 1924 Belgium usurped the place formerly held by the United States, with 34.2 per cent of the total of 163,409 tons; the United Kingdom was second with 27.7 per cent, and Germany fourth with 15.9 per cent.

Railroad Fuel Economy Marked

Less fuel was required in 1925 for railroad operation than ever before in our history, when measured by performance, according to figures of the Bureau of Railway Economics. For each thousand ton-miles of freight and equipment 159 lb. of fuel was burned, compared with 170 in 1924 and 183 in 1923. Consumption of Class-I railroads in 1925 included 97,500,000 tons of coal, and fuel oil equivalent to 8,800,000 tons of coal. This showed, compared with 1923, when the volume of freight was practically identical with that of 1925, a reduction of 12,000,000 tons of coal, but an increase of about 500,000 tons in the fuel oil equivalent. The net decrease, therefore, was approximately 11,500,000 tons for an equivalent performance.

Supplies of Coal in Industry

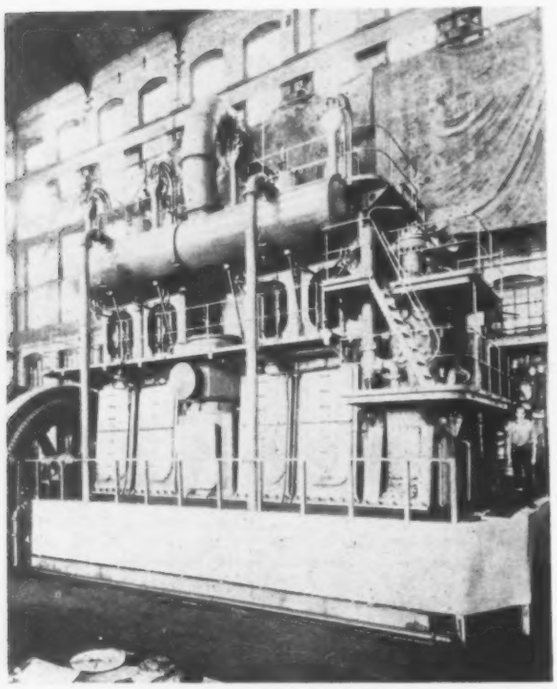
For its significance to the buyer of coal the National Association of Purchasing Agents has compiled the following statistics of the number of days' supply on hand in various industries. The days' supply on hand given for the various industries is as of March 1, and the Government figures are given as of Feb. 1 for comparison.

	March 1	Feb. 1
Steel plants	24	26
Electric utilities and coal gas plants...	47	50
Railroads	23	25
By-product coke	21	23
Miscellaneous industries	42	37

High-Power Diesel Engines

Delivering a Power-Stroke with Every Piston Stroke, Weight per Horsepower Is Low —Steel Used for Cylinders

DOUBLE-ACTING two-cycle Diesel engines are being built for the United States Shipping Board by the Worthington Pump & Machinery Corporation, 115 Broadway, New York, for installation on shipboard. The same type of engine, built for factory power service, consists of the same standard parts. The four-cylinder engine weighs only 61 per cent as much as a single-acting four-cycle eight-cylinder engine designed for the same service. Cost is about in proportion to weight. The engines now building for the Shipping



Four-Cylinder, Two-Cycle, Double-Acting Diesel Engine. The design of the piston, which is made of five parts, is a feature

Board and private interests have four cylinders 28 in. diameter by 40 in. stroke. Operating at a speed of 95 r.p.m., the rated output is 2900 brake hp. delivered to the shaft coupling.

Worthington unit design is made up of two dome-shaped working cylinders and a common central block containing the exhaust and scavenging air parts. Into the steel cylinder is pressed a thin cast iron liner to take the wear occasioned by the movement of the piston. Liners, steel cylinders and block are all clamped into a single assembly by circular lugs and studs, the lugs bearing against the formed inner ends of the steel cylinders. This construction permits expansion of the liners and shells outward, without disturbing the central assembly.

To form a water-cooling jacket a light cast iron cover, slipped over the cylinder, is bolted at the outer end to the flange of the cylinder cover, while the inner end is packed against leakage by a light gland and fibrous packing ring. To intensify the cooling action the jacket surface of the steel cylinder is corrugated. The cooling is increased further by the introduction of the water through the central block. Retarders consisting of steel rods increase the water velocity to about 3 ft. per sec., resulting in a high rate of heat transfer from the liner and steel cylinder.

The piston is of unusual design, being made of five parts. Two end sections, exposed to the heat of combustion, are of alloy steel. Between these tops or crowns are placed two cast iron bodies holding the piston rings. These four parts are fastened to the piston rod and in the space between the two assemblies are clamped the two halves of a cylindrical central section held together by keyed bolts. The design has the advantage that the parts may be disassembled quickly for repairs or renewal. It is much lighter than a one-piece construction.

Fuel spray valves, of simple design, consist each of a body, with a needle valve and atomizing disks. Oil is introduced above the disks by the governor-controlled pump and when the needle valve is raised by the cam and valve rocker, high-pressure air forces this fuel into the cylinder in a nebulous spray.

Reversing is obtained simply, through the use of helical gears between the crankshaft and camshaft, one of which is shifted longitudinally and, in so doing, rotates through a definite angle. This gear shifting causes the camshaft to rotate to a position such that the fuel cam is in position to open at the proper time. The fuel pump is driven by the same helical gear train, and the timing of the pump plungers is altered to conform to the desired direction of running.

The design at present is confined to two sizes: 28 x 40 in. and 16 x 24 in., the latter rated at 250 brake hp. per cylinder at 180 r.p.m. Another line of 34-in. bore by 48-in. stroke is contemplated which, at 110 r.p.m., will develop 1500 brake hp. per cylinder. This means that engines of as high as 12,000 brake hp. are feasible, using eight cylinders.

Bethlehem Diesel Engines

Bethlehem two-cycle oil engines of the Diesel type have been designed not only for high efficiency in operation, but for ease of inspection, disassembly and repair. These features were stressed in a moving picture exhibition in Philadelphia last fall, at the annual meeting of the Association of Iron and Steel Electrical Engineers.

In a booklet just issued by the Bethlehem Steel Co. the marine type of this engine is described in considerable detail, with a number of photographic and other illustrations, sections and assembly views, as well as clearance and dimension diagrams and installation diagrams. The engines are built with two sizes of cylinders, 26 x 48 in., and 27 x 60 in. In each size engines may be obtained with 4, 6 or 8 cylinders and the power developments run from 1575 to 4650 shaft hp., dependent upon the size of cylinder, number of cylinders and speed of operation.

The engine design is based on the unit system, each unit consisting of two power cylinders, together with cylinder support, A-frames, bed plate section and crank shaft section. The crank shaft sections are interchangeable, each consisting of two cranks 180 deg. apart and with flanges on each end. Proper timing for multi-cylinder engines is obtained by bolting together the shaft sections at the desired angles.

Compressed Air Trade Standards

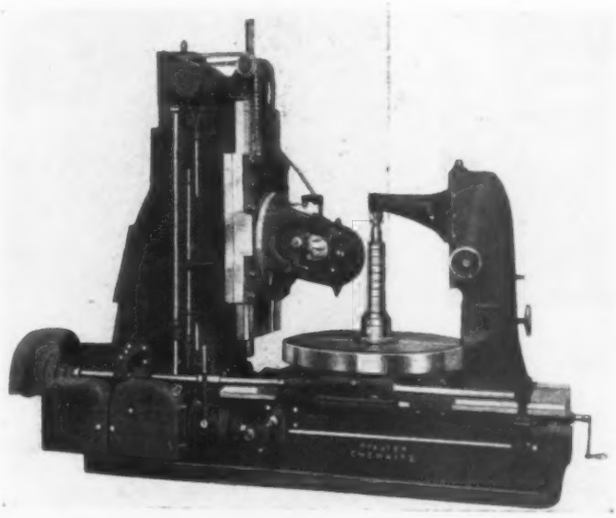
Trade standards adopted by the Compressed Air Socity, 90 West Street, New York, have been gathered into a 48-page pamphlet, of which the second edition has just appeared. Nomenclature and terminology, standard capacities and pressures, displacement tables, compressed air transmission with consideration of pressure losses, horsepower requirements and many other items are covered, as well as installation and care of compressors, piping tables, data on lubrication and standard of practice in compressor testing. Tabular matter throughout the book is in considerable detail and there are several diagrams.

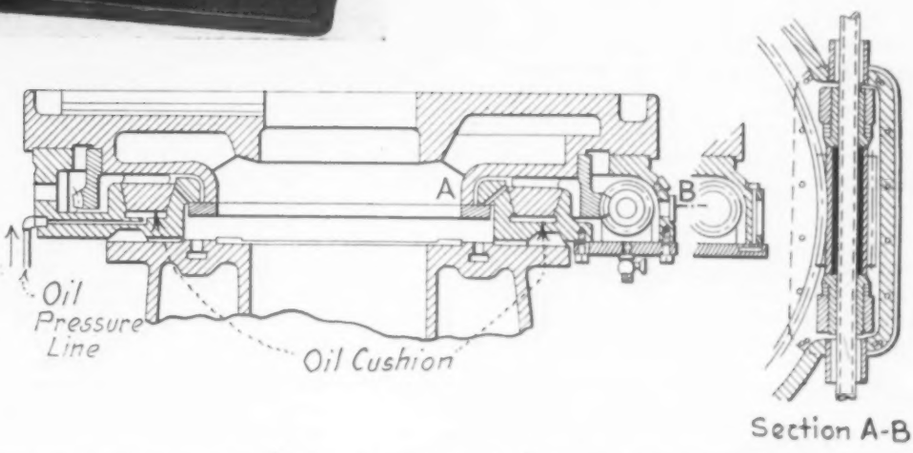
A large group of technical societies are participating in a nation-wide program of meetings on oil and gas power during the week of April 19. The program includes over 75 gatherings at industrial centers, where the scientific, production and economic problems related to internal combustion engines and their fuels will be discussed.

Gear Hobbers Equipped with Hydraulic Table Load Balancing Device

Improvements incorporated in the automatic gear hobbing machines manufactured by the Herman Pfauter Works, Chemnitz, Germany, and marketed in this country by the O. Zernickow Co., 15 Park Row, New York, include a hydraulic table load balancing device for the two largest sizes of the machines.

This device, shown in the accompanying line sketch, is designed to relieve the table of the machines of the weight of the large gear blank hobbed on them. The entire weight of the gear blank and blank supports and three-fifths of the table weight are placed on an oil cushion giving liquid friction. The remaining two-fifths of the table weight receives mixed or semi-fluid friction as a result of the large bearing surfaces and the resulting small pressure area. Oil is forced into a circular space called the oil cushion by means of a geared pump, and the pressure of the oil may be read on the gage provided. The pressure is regulated according to the table load by means of a throttle.





Automatic Gear Hobbing Machine for Spur, Helical Worm and Herringbone Gears. A feature of the larger machines is the hydraulic table load balancing device, the arrangement of which may be noted from the line sketch at the right

The Pfauter line includes ten sizes of generating machines for spur, worm, helical and herringbone gears; sprockets; ratchets; circular saws; spline shafts, etc., the No. 4 machine for spur gears up to 87 in. in diameter being illustrated herewith. The main drive may be by motor or from an overhead countershaft to a cone pulley. All but the smallest machine are provided with double back gearing for heavy work. The hob drive is through transmission elements from the main shaft.

The cutter head is of heavier construction than heretofore, and can be swiveled to any degree from horizontal to vertical, a graduation being provided for accurate cutting. The hob spindle bearing is adjustable sideways for exact centering of the hob, and it has a scale and vernier. The hob spindle carriage slides on the upright column on wide double Vee-shaped ways with adjustable gibs. A counterweight within the upright balances the carriage with the cutter head. Rapid power traverse of the cutter head and table carriages in both directions is provided for the five largest machines.

The work table is of large diameter and has a circular oil channel as shown. The table has a flat horizontal bearing and adjoining this, a conical bearing and a flat bearing on the bottom, the latter being intended to prevent the table from lifting and jumping.

The table base slides on wide double Vee-shaped ways on the bed of the machine and can be locked in any position. All machines have a measuring scale with vernier for setting the table against the hob when cutting worm wheels. In addition to this, the table screw has a graduated dial for setting to exact depth of cut.

The automatic feed is controlled through the feed gears, which actuate the vertical movement of the cutter head for the automatic infeed of the table against the hob. The automatic feed for the cutter head is obtained through a drop worm drive near the top of the upright. For the automatic infeed of the table against the hob, a drop worm drive is provided at the front side of the bed. The feed can be stopped automatically or by hand.

The index worm wheel is of large diameter and is located close under the work table; to assure close accuracy it has teeth of fine pitch. The index worm is hardened and ground all over to conform to the hob used in cutting the index worm wheel. The worm runs in an oil bath and is adjustable to take up wear between the worm and wheel. It is driven from the main shaft through change gears. An indexing accuracy of 0.0004 in maximum error from tooth to tooth in a 40-in. diameter gear is guaranteed. Standard equipment includes about 40 index gears.

The upright of the machine is a hollow casting. The base is bolted to the bed and held in position by tapered dowel pins. The countershafts of all machines have ring oiling bearings.

The maximum diameter of spur gears that can be accommodated on the smallest machine is 4 in. and on the largest 157½ in. The power required is ¾ hp. for the smallest machine and 20 hp. for the largest. The net weight of the machines, with differential and oil pump, ranges from 690 to 82,000 lb.

Automotive Production Meeting in Chicago

This year's production engineering meeting of the Society of Automotive Engineers is scheduled for Sept. 21 to 23, at the Hotel Sherman, Chicago, and will be concurrent with the exposition of machine tools and heat treating equipment to be held by the American Society for Steel Treating. At the S. A. E. meeting there are to be sessions on factory conveyor systems and factory methods, automobile gears, machine tools, and inspection methods.

Safety Device Developed for Tube Drawing Bench

Thoroughness in the accident prevention work of the Bridgeport Brass Co., Bridgeport, is reflected in the following description of a safety device used in connection with the tube drawing benches. The description is by Kenneth C. Monroe, safety engineer of the company.

In drawing down pierced brass tubes in a hydraulic draw bench, fragments often fly from the end of the tube as it passes through the die. This is caused by the end of the tube being left ragged from the piercing operation. Several accidents have resulted from these fragments hitting the operators.

To overcome this trouble, H. A. Knight, engineer of the Bridgeport Brass Co.'s tube mill, designed the guard shown in the accompanying illustrations. The device consists of an inverted clam shell made of boiler iron, with opening and closing mechanism attached to the lever that controls the hydraulic power which operates the machine.

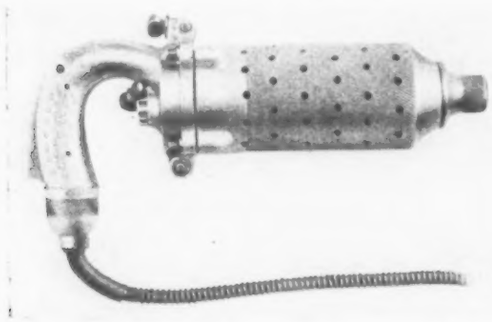
One view shows the guard open for insertion of the billet to be drawn, the other view showing the guard closed for protection as the billet is being drawn through the die. The device does not interfere with production in any way, as no extra operations are required to open or close it. All flying fragments are caught and held in the device, thus entirely eliminating danger of accidents.

Guard Used in Connection With Tube Drawing Bench to Prevent Accidents From Flying Fragments. It is opened and closed by means of a lever

Electric Hammer for Chipping, Calking and Other Use

An electric hammer known as the Simbi, for use with 60-cycle alternating current and operating at the rate of 7200 strokes per min., is being marketed by the Fermot Co., 200 Broadway, New York.

It is available in four types, weighing from 2 to 10 lb., and ranging in capacity from ¼ in. to 1 in. The larger sizes of the machine are adapted for a variety of use, including chipping, calking, bending of boiler tubes and drilling in concrete or stone. Absence of noticeable vibration is claimed to minimize fatigue of operation and adapt the tool for delicate as well as heavier work.



Operation Is at 7200 Strokes Per Min. Absence of noticeable vibration is claimed to minimize fatigue of operation

Within the housing of the machine there is an electric coil, which surrounds two cores, one above the other. The core nearer the tool stem is called the striking core and that nearer the handle is called the counter-striking core. Within the counter-striking core there is a spring. When current flows through the electric coil, the striking core is attracted against the counter-striking core. As the intensity of the current increases, the force of the attraction overcomes the resistance of the spring, compressing it. Then comes the change in the direction of the electric current, (with the reversal occurring every half cycle) the polarity of the solenoids is reversed and the compressed core spring is released and forces the striking core against the tool stem. If the current is at 60 cycles and consequently there are 120 reversals per sec. the hammer will strike 60 blows per sec. (120 strokes per sec.) or 3600 blows per min.

Flexible cable and plug are provided for connecting the hammer to any convenient source of current. The largest machines, types B, C and D, are operated by pressing the switch on the handle. The hammer is lubricated by unscrewing a bolt at the top, and removing the spring within the upper, or counter-striking core. The arrangement is such that the machine may be cleaned conveniently.

Proper Goggles Prevent Eye Injuries

Organized effort by the industries to eliminate eye injuries, which total 250,000 yearly, was urged in the annual safety lecture delivered before the Syracuse Safety Council March 26 by Joshua Eyre Hannum, research engineer of the Eye Sight Conservation Council of America, New York.

The first big step is to gain the confidence of employees, whose reluctance to utilize safety appliances is a big problem, said Mr. Hannum. "The eye protection program for industry must take into consideration the importance of goggles suiting the eyes as well as fitting the face. One of the most difficult problems with which safety workers are contending will not be solved until the importance and value of eyesight tests in industry are fully appreciated, and goggles are used to serve the dual purpose of aiding vision and protecting the eyes."

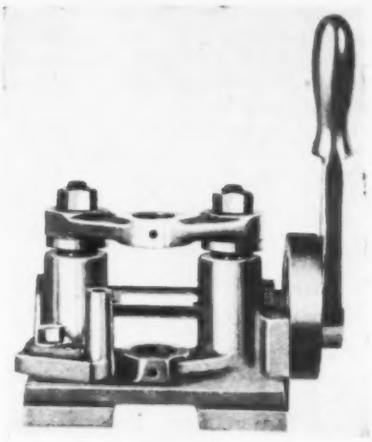
An operating exhibition of machine tools will be held at Dayton, Ohio, May 3 to 15, by the Seifreat-Elstad Machinery Co. The company has prepared a catalog illustrating and describing the machine tools which will be demonstrated.

Drill Jigs and Fixtures Arranged For Quick Clamping

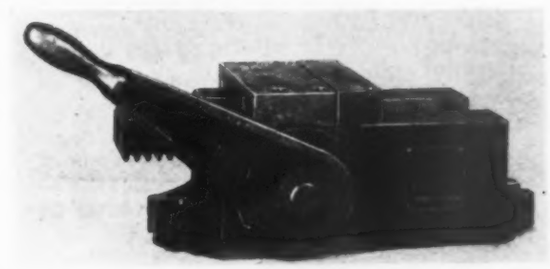
Standardized drill jigs and fixtures known as the "Quick Clamp," and designed for use in both single and multiple-spindle drilling of light and heavy parts are being marketed by the Universal Standard Sales Co., Murphy Building, Detroit.

Ease of operation is a feature, the simplicity of the locking mechanism requiring only a downward pressure to lock the work in the jig and slight upward pressure to release the work. By replacing the bushing plate and adapters a number of different parts may be handled. All parts of the jigs are interchangeable and wearing parts are hardened and ground.

The jig here shown is the Type 2, which is designed to replace the screw-bush type. It is made up of a



Standardized Drill Jig Designed to Replace Screw-Bush Type. Rapid loading and unloading reduces non-productive time. The "quick-clamp" milling vise is shown below



base with two columns, in which are two rack toothed pillars supporting a bushing plate. The latter is bored to receive a drill-bushing in alinement with a hole bored in the base to receive the work-holder or adapter. The pillars are moved up and down by means of a pinion shaft, which is operated by the handle and which locks only when work is actually located in place ready to be machined. The drill bushings can be made to hold pieces of round, square or irregular shape, as only vertical movements are employed in operating the jigs.

Another style available is the No. 4 jig, which is made up of a square or rectangular base with corner posts supporting a bushing plate which is bored to receive the drill bushings. This type is designed to replace the box-type of jig used for multiple spindle drilling. The same handle with rack and pinion movement as used in the Type 2 jig to pull two pillars down is employed to push one or more pillars up, supporting the work rigidly against locators underneath the bushing plate while drilling.

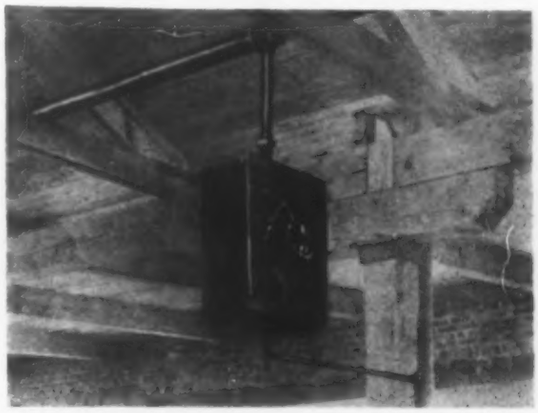
A "quick clamp" milling vise being placed on the market by the company is also shown herewith. This vise incorporates the same principles as the jigs described above.

Bituminous coal mined in the week ended April 3 is estimated at 8,725,000 net tons—much the smallest week in more than eight months. It compares with 9,609,000 tons in the preceding week and with 10,263,000 tons in the week before that.

Unit Heater for Use In Shops, Warehouses and Power Plants

A unit heater designed to supplement existing steam and hot water heating systems in machine shops, warehouses and power plants, is being marketed by the Modine Co., Racine, Wis. The unit may also be used as complete equipment on new installations.

The device is made up of three major parts: the



The Unit Is Suspended From the Steam Line by a Length of Pipe and a Union. Brackets and braces are unnecessary

condenser assembly, the manifold and frame assembly and the motor and fan assembly. The steam condenser employed is of patented construction and is designed to provide not only for proper heat-transfer but also for free contraction and expansion. The light weight of the device, only 125 lb., is stressed as eliminating the necessity of brackets, braces and structural work, it being only necessary to suspend the unit heater from the steam line by means of a length of pipe and a union. Two men with a pipe wrench can make the connections. Another advantage of the light weight is that the complete unit can be turned on the union connections for direction of air flow toward machine bench, window, door, or wherever desired to suit the immediate heating situation. Adjustable deflectors may be added to control the downward angle of heat discharge.

The units are tested to 150 lb. hydrostatic pressure. They are rated 165,000 B.t.u. per hour with 5 lb. steam pressure and room temperature of 60 deg. Fahr. The fan unit is designed to pass approximately 2000 cu. ft. of air through the heater per minute.

Coated Steel Pipe Made in England by a New Process

The South Durham Steel & Iron Co., Ltd., West Hartlepool, England, has completed a new pipe plant at Stockton-on-Tees, adjacent to its plate rolling mills, capable of a large output of pipe ranging from 18 to 72

The Pipe Is Provided With a Hydrocarbon Lining of Various Thicknesses

in. in diameter, in lengths up to 30 ft. and in thickness up to 2 in. Part of the equipment has been installed with the special purpose of providing for the manufacture of mild steel pipe under a process patented by Benjamin Talbot, Middlebrough, England. This process provides for a hydrocarbon lining, which is said to be entirely impervious to water and is unattacked by caustic solutions or dilute acids, besides being a non-conductor of electricity and therefore immune from destruction through electrolytic action.

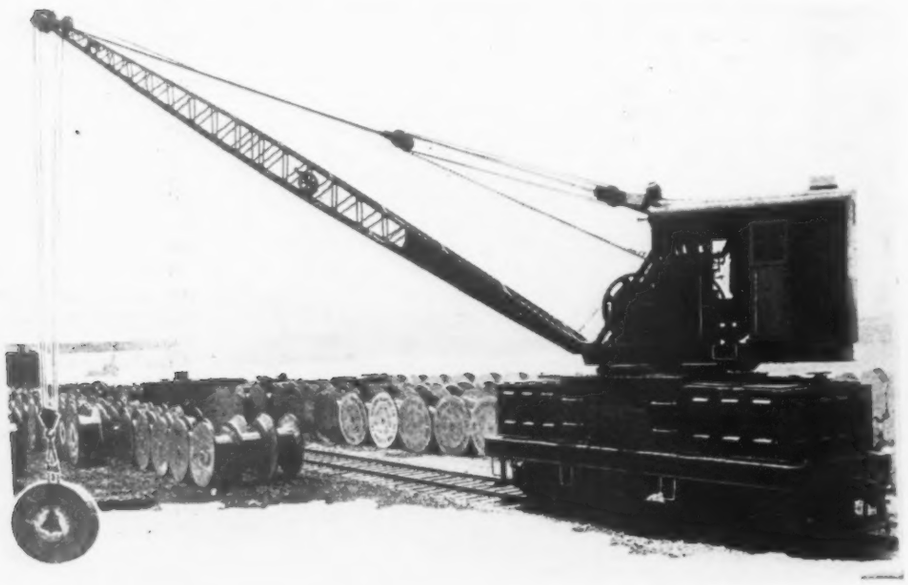
The method employed to apply the lining is a centrifugal application of molten bitumen or other suitable hydro-carbon specially treated to yield the proper physical properties and loaded with a powdery inert filler. The thickness of the lining material can be varied to suit special requirements, but usually is ¼ in. It is flexible, allowing for distortion of tubes during handling, and adds only slightly to the weight of steel pipe.

Plate for the pipe used in the Talbot process are rolled with a diamond chequer or some other suitable pattern so as to form an anchorage for the lining material. The hydrocarbon material can be applied to the outside as well as the inside of the pipe when desired.

The selling agents for this pipe are Cochrane & Co., Ltd., Middlesbrough.

Storage Battery Locomotive Crane Employed in Handling Cable Reels

Included in the materials-handling equipment at the Kearny, N. J., plant of the Western Electric Co. is the large storage battery locomotive crane here pictured. The machine, recently placed in service, is used for moving cable reels from point to point around the yard. In addition, it draws ash cars back and forth from the ash-handling building to various parts of the yard, where ashes are being used for filling in what was originally a swamp.



Storage Battery Locomotive Crane Designed to Handle Cable Reels Weighing from 2 to 5 Tons Each. About 150 of these reels are handled each day. Control levers and foot pedals are arranged as in a steam or gas-engine crane, which facilitates handling by an operator accustomed to the latter type

The crane was built by the Brown Hoisting Machinery Co., Cleveland, and was designed to handle 150 reels a day over a maximum distance of 10 miles. The cable reels vary in weight from 2 to 5 tons each, and the average round trip is 500 ft. The maximum number of trips amounts to 100 daily. The crane weighs 105 tons complete, and in addition the storage batteries furnish the power for moving a freight car of the gondola type, which is coupled to the crane.

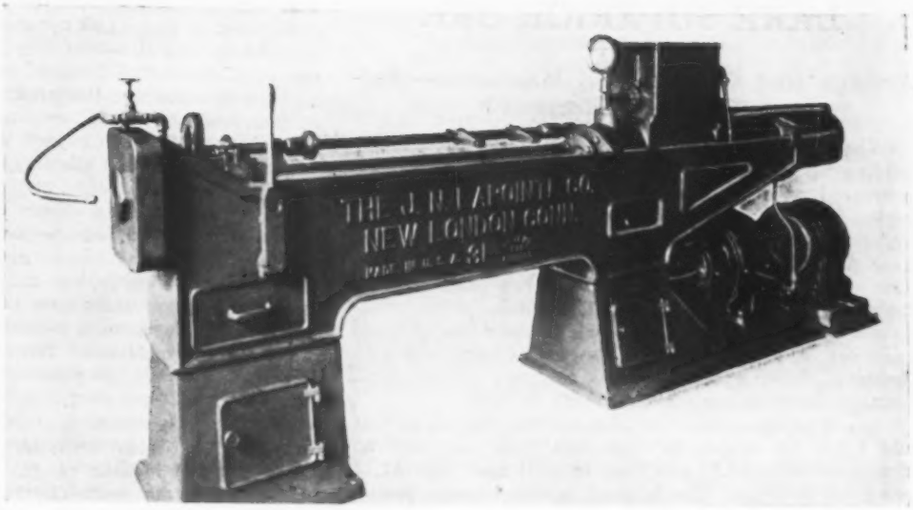
When hoisting a full load, the operating speed is 60 ft. per min. with a 2 r.p.m. speed when rotating full load on a 50 foot radius. The track travel over level track is 150 ft. per min. The length of the boom is 40 feet. A 100 hp. General Electric motor operates the boom, whip and travel and a 25 hp. G. E. motor rotates the crane. These motors are of 250-volt direct current, 2-commutating inner pole switch crane fully-inclosed type. The machine is equipped with a 100-cell type FL-13 Exide-Ironclad battery which has 1080 amp. hr. capacity, 205 kw.hr. at the six-hour rate of discharge.

For recharging of the battery the hoist is run into the generating plant where the battery is charged by a 250-volt motor generator set. With this motor-generator set is a panel containing a 500 amp. Sangamo locomotive type meter with an 1800 amp. hr. dial. These are used for recording the charging and discharge of the battery, together with the necessary ammeter and voltmeter. An Anderson three-point charging plug receptacle of 300-amp. capacity is also part of the charging equipment.

A feature of the hoist is the arrangement of the operating mechanism. Wherever possible, levers and foot pedals have been arranged in positions corresponding to those having similar functions in a steam or gasoline engine-operated hoist. This facilitates handling by an operator accustomed to the latter type of hoist. A voltmeter and an amp. hr. meter are located in the cab beside the operator's position. In the forward part of the cab a scale records the height of the boom from the ground, as it travels up and down while a dial outside, but in full view of the operator, registers the weight of the load on the boom. By this arrangement, the operator can ascertain at a glance the exact conditions under which he is operating. Besides the operator, only one other man is normally required to shift the cable reels from one place to another. This man merely couples and uncouples the clevis which, by means of a drawbar, hooks the reels.

Electric Furnace Refractories

A study of requirements for electric furnace refractories is being made by the United States Bureau of Mines. The work on this problem will follow in a general way the line of attack used in the bureau's study of the open-hearth refractories problem. It will include a survey of general conditions and the gathering of data on refractories used, service life, probable cause of failure, etc. Chemical and mineralogical composition of used brick will be determined and an attempt made to correlate the data with that already obtained in the open-hearth investigation.



The Stroke of the Draw Rod Is 56 In., and the Speed Is Controllable From 0 to 24 Ft. Per Min. on the Working Stroke. With a fast return of 60 ft. per min. speed changes may be made while the machine is in operation. Pressure is supplied by a Hele-Shaw hydraulic pump. A new feature is the removable chip pan

Hydraulic Broaching Machine with Range of Cutting Speeds and Fast Return

The J. N. Lapointe Co., New London, Conn., is adding to its line a hydraulic broaching machine designated as the No. 3-L, which, like the No. 4-W hydraulic machine described in THE IRON AGE of Oct. 8, 1925, provides a wide range of cutting speeds with a fast return of 60 ft. per min. of the ram. A low pressure relief valve is provided on the return stroke which opens automatically when the ram meets with undue resistance. This feature is stressed as eliminating the breakage of broaches often caused by the tool being backed up against the inside of the face plate.

In this machine, as in the No. 4-W, the draw rod is moved by oil pressure acting against the piston of a cast-iron cylinder. The latter is 7 in. in internal diameter and is mounted as on the larger machine. At a pressure of 1000 lb. per sq. in., which is the maximum recommended and for which the relief valve in the pump is set, a pull of 31,400 lb. is exerted on the draw rod. The pressure is supplied by an LP-12 Hele-Shaw variable-delivery multi-plunger hydraulic pump which operates at 900 r.p.m. The pump is compact and is driven either from a countershaft or by a 7½-hp. direct-connected motor mounted as shown. As in the 4-W machine, speed changes can be made while the machine is in operation or idle and speed adjustments for a predetermined rate can be quickly made. The speed control is arranged as in the larger machine and the control shaft can be locked at any speed.

A feature stressed is the design of the pressure cylinder, in which ports are cored to eliminate piping and the possibility of leakages. Only two pipes are used in the entire hydraulic system, these being of extra heavy copper and only 27 in. in length. The fast return valve is cast separate from the main cylinder, and all cores are machined so that any sand or other gritty substance will be removed. The cores are made amply large to decrease the velocity of the liquid, and thereby reduce friction and increase efficiency.

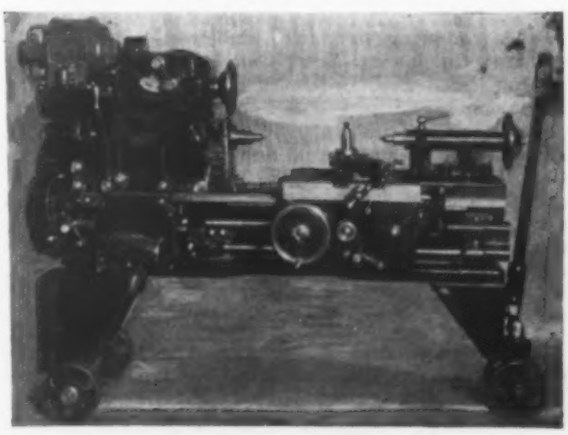
The automatic stop provided on the 4-W machine for controlling the length of the stroke is employed also on the machine illustrated. This stop, which is of the spring and plunger type, does not require wrenches for adjustments, and can be set for automatic return. The length of the stroke can be varied by means of this stop, or started in any position either on the cutting or return stroke by the hand lever, which provides complete control. As in the machine previously described, the hand control lever operates the pump control through a system of linkage. The pump is connected directly to an automatic valve arrangement which is integral with the pressure cylinder, this valve being arranged so that during the return stroke of the ram, the oil which produces the pressure on the cutting stroke is transferred from one side of the piston to the opposite side without going through the pump. On the return stroke, the oil is forced into the hollow draw rod and therefore works against a 2⅛ in. diameter which produces the rapid return travel, which is an outstanding feature of the machine.

The reservoir above the pressure cylinder accommodates the excess oil which appears during the working stroke. Connections are arranged so that when the relief valves in the pump open under pressure, they exhaust into a reservoir in the base of the machine, and the oil is pumped back up into the reservoir above the pressure cylinder by a small auxiliary pump. The system is filled through the reservoir above the pressure cylinder, about 20 gal. being required for filling. It is open to atmosphere at all times through the reservoir. This being the highest point, the possibility of the air accumulating in the system is eliminated.

Coolant is applied to the broach, both as it enters the work and also as it is leaving, by means of a geared pump. A new feature is the removable chip pan, which is located in the front part of the machine bed. As the broach is being pulled through the work the coolant washes the chips from the tool down into this pan, which is perforated to allow the coolant to go on through to the reservoir. Only a few seconds are required to remove and empty the pan.

Adds 16-In. Portable Machine to Line of Lathes

The mounting of the lathe on all-steel ball-bearing wheels to permit of convenient transportation from one place in the shop to another, by one man, is a feature of the portable lathe here illustrated which is being added to the line of the Rahn-Larmon Co., Cincinnati.



The machine is designed primarily for use in railroad shops, and is available in 16-in. and 18-in. sizes and in lengths of bed of 5 ft., 6 ft. or 7 ft.

The driving motor is mounted on the headstock, as shown, and is geared directly to the all-geared drive head. Nine spindle speeds are obtainable. A 1-hp. motor is employed, and start, stop and reverse push-button stations are mounted to facilitate operation.

LAKE SUPERIOR ORE

Average Iron Content Well Maintained—Manganese Content Increased

The average iron content of Lake Superior ore is holding up well and last year showed little change as compared with recent years, according to the annual report of the Lake Superior Iron Ore Association, Cleveland, covering the average of analyses for a 10-year period. Tables are given showing average analyses of all grades of ore from all ore ranges, these including the iron natural, phosphorus, silica, manganese and moisture. Other tables show the average analyses of the tonnage by ranges. Charts are also included showing the average analyses of the total tonnage from all ranges from 1902 to 1925.

The average content of iron natural for all grades and from all ranges in 1925 was 51.74 per cent as compared with 51.72 per cent in 1924 and with 51.79 per cent in 1923. The highest in the 10-year period was 52.07 per cent in 1921, which was a lean year with shipments of less than 23,000,000 tons and more generally confined to the richer ores.

One point of interest brought out in the figures is that the average analyses for the 10-year period show a steady decrease in the moisture content. This was 10.58 per cent last year compared with 10.75 per cent in 1924. This decrease in moisture is attributed largely to beneficiation methods employed particularly on the Mesaba range where an increasing amount of ore is being washed. The average moisture content of Mesaba ore, comprising nearly two-thirds of the total shipments, was 11.14 per cent last year as compared with 11.35 in 1924 and with 12.60 per cent in 1916.

The average iron content of Bessemer ore last year was 54.80 per cent, or the same as the previous year. This was not exceeded in the 10-year period except in 1923, when it was 54.98 per cent. The average of low phosphorus non-Bessemer ore was 51.46 per cent, or the greatest in the 10-year period. The average of high phosphorus non-Bessemer ore was 50.85 per cent as compared with 50.86 per cent in 1924. The average iron content of silicious ore was 39.91 per cent last year, or the lowest in the 10-year period. In 1924 the average was 41.34 per cent. More silicious ore was shipped last year than in any previous year with one exception in the 10-year period, although the percentage of silicious ore shipped in 1925 as compared with the total was slightly less than during the preceding year. The larger shipments of silicious ores may account for the decrease in the iron content of that grade of ore shipped last year. The average content of manganese ores was 43.46 per cent last year, which compares with 43.74 per cent in 1924.

Taking the production of all grades by ranges and comparing last year with the previous year, the iron content on the Mesaba range increased from 51.93 in 1924 to 52.05 per cent, on the Gogebic range it decreased from 53.28 to 52.69 per cent, on the Marquette range it increased 49.76 to 50.23 per cent due to the fact that a smaller percentage of silicious ore was shipped from that range last year. On the Menominee range it increased from 50.60 to 50.66 per cent; on the Vermillion range it decreased from 57.96 to 57.82 per cent and on the Cuyuna range it decreased from 45.30 to 42.26 per cent, due evidently to the fact that 61.80 per cent of the shipments from this range last year were in manganiferous ore, which is low iron content.

The average phosphorus content of all grades of ore shipped last year was 0.099 per cent as compared with 0.100 per cent during the preceding year. The manganese content increased from 0.76 per cent in 1924 to 0.82 per cent last year.

Detroit Foundrymen Announce Committees for International Congress

Realizing the importance of the thirtieth annual convention and exhibition of the American Foundrymen's Association and the second International Foundrymen's Congress to be held in Detroit, Sept. 27 to Oct. 1, the Detroit foundrymen have organized committees to take care of the occasion. The general committee has been selected to consist of Robert Crawford, Atlas Foundry Co., president; J. J. Boland, Griffin Car Wheel Co., vice-president; Russell M. Scott, Packard Motor Car Co., secretary; Fred Cowan, W. R. Thompson Co., treasurer, with K. C. Babo, Dodge Bros.; Fred Erb, Erb-Joyce Foundry Co.; H. M. Lane, H. M. Lane Co.; J. Mahon, American Car & Foundry Co., and Vaughn Reid, City Pattern Works, as members of the executive board.

The following committee chairmen have been appointed: On finance, E. S. Van Dalson, Dodge Bros.; on golf, Fred Erb, Erb-Joyce Foundry Co.; on ladies, J. Mahon, American Car & Foundry Co.; on publicity, J. J. Boland, Griffin Car Wheel Co.; on hotels, G. Fuller, Federal Foundry & Supply Co.; on transportation, W. R. Thompson, W. R. Thompson Co.; on plant visitation, H. M. Lane, H. M. Lane Co; on entertainment, J Cluff, F. B. Stevens Co.; on reception, C. M. Culver Employment Managers' Association.

Fluorspar in 1925

Despite the large output of steel in 1925 domestic shipments of fluorspar, according to the United States Bureau of Mines, amounted last year to only about 113,600 net tons, a decrease of 9 per cent from the shipments in 1924. The general average price per ton, f.o.b. mines, or shipping points for all grades in 1925 was $18.06, which is $1.55 less than the average for 1924. Fluorspar exports last year, though small, were more than in 1925.

Based on reports furnished by manufacturers who produced about 93 per cent of the total basic open-hearth steel, the consumption in 1925 at such plants amounted to about 136,900 tons, with the stocks at those plants on Jan. 1, 1926, about 49,000 tons. These compare with 119,800 tons consumed and 64,000 tons in stock respectively in 1924.

Fluorspar imports in 1925 were 48,700 tons, a decrease of 5 per cent from the 1924 receipts. The United Kingdom was the principal source of these imports, with Germany second and British South Africa third.

Farm Efficiency Due to Greater Use of Power and Machinery

American farm labor increased in efficiency about 22.5 per cent from 1910 to 1920, according to the National Industrial Conference Board, 247 Park Avenue, New York, and this gain in productivity was due largely to increasing use of power and machinery, as the actual number of workers during that decade declined 9 per cent.

"The United States leads the world in the development of agricultural machinery," says the report, "as is demonstrated by the increasing use of American agricultural machinery of all kinds all over the globe. In the United States more than thirteen times as much farm machinery was in use in 1920 as had been in use in 1870, and the value of machinery used amounting to $36 per worker in 1870 had risen to $176 worth per worker in 1920, both figures being in terms of dollars of 1913 purchasing value. The average farm worker nowadays thus is using about five times as much machinery as the average farm worker 50 years ago."

Primary horsepower has also increased on the farm, it being estimated that agriculture uses a total amount exceeding that used in all manufacturing and central station plants combined. The total amount of horsepower used in American farms in 1924 is estimated at 47,000,000. The National Industrial Conference Board states that about 18,000,000 fewer people are required for agricultural production today than would be needed without this great increase in the use of power. The use of electricity is not greatly extended, the total number of electrical installations not exceeding 500,000 on the 6,500,000 farms of the country.

International Foundry Trades Exhibition Planned for London

Plans are under way for an International Foundry Trades Exhibition at the Royal Agricultural Hall, Islington, London, from June 10 to 19, according to consular advices to the Department of Commerce from London. It will be held under the auspices of the Foundry Trades' Equipment and Supplies Association, Ltd., representing the exhibitors, and the Institute of British Foundrymen, representing foundrymen of Great Britain.

In scope, the exhibition is intended to cover every type of raw material, plant and supply used in the iron, steel and non-ferrous foundry practice and allied trades. It is understood that the organizers are issuing invitations to all British foundries, to members of the Institute of British Foundrymen; to the British Cast-Iron Research Association, to European foundry technical associations and to each member of the American Foundrymen's Association. Previous international exhibitions, featuring the European foundry business, have been held in Liege (1921), Birmingham (1922), Paris (1923) and Birmingham (1924).

Technical Program for Steel Treaters' Spring Sectional Meeting

The technical program for the spring sectional meeting of the American Society for Steel Treating, to be held at the Hotel Bond, Hartford, Conn., May 20-21, has been arranged as follows:

Thursday, May 20, morning technical session, F. P. Gilligan, chairman:

"Recrystallization Temperatures of Cold-Rolled Electrolytic Iron and Open-Hearth Steel Strip," by John R. Freeman, Jr., Bureau of Standards, Washington, D. C.

"Factors Affecting the Machinability of Alloy Steels," by J. S. Vanick, International Nickel Co., New York.

Friday, May 21, morning technical session, A. H. d'Arcambal, chairman:

"Necessary Precautions in the Manufacture of Alloy Steels," by Marcus A. Grossmann, United Alloy Steel Corporation, Canton, Ohio.

"Forging by the Upset Process," by J. C. Kielman, New Departure Mfg. Co., Bristol, Conn.

Evening technical session, S. P. Rockwell, chairman:

"The Role of Stainless Iron and Steel in Industry," by Norman L. Mochel, Westinghouse Electric & Mfg. Co., Philadelphia.

"Heat Treatment of Die Blocks," by Alfred J. Porter, Jr., Heppenstall Forge Co., Bridgeport, Conn.

Visits at various plants have been arranged for the afternoons of both days, the companies which are offering these facilities being the Billings & Spencer Co., Colt's Armory, Hartford Rubber Works, Pratt & Whitney Co., Royal Typewriter Co., Underwood Typewriter Co., Union Drawn Steel Co. and the New Departure Mfg. Co.

The banquet has been arranged for Thursday evening at 6.30. There will be a meeting of the board of directors at 10 a. m. Wednesday, May 19, and also what is termed an "early bird's dinner" at 6 p. m. on the same day.

Chamber of Commerce of United States to Meet May 11-13

WASHINGTON, April 13.—The Chamber of Commerce of the United States will hold its annual meeting in Washington on May 11-13. The major subject for discussion will be "Self Regulation in Business." Other subjects will include "Local and State Taxation and Budgeting" and "Relations of the States to the Federal Government." Speakers of national prominence, including Government officials and business men will address the meeting. Among them will be A. L. Humphrey, president of the Westinghouse Air Brake Co.

The conference will be divided into nine group meetings, each representing a particular branch of American business. Under the manufacture group discussion will be "Foreman Training—Essential to Plant Self-Government;" "Wages—The Present Attitude of Employer and Employee."

Quad-City Foundrymen's Association, East Moline, Ill., at its meeting April 7, elected the following officers: J. H. Diedrich, Blackhawk Foundry & Machine Co., Davenport, Iowa, president; Hyman Bornstein, Deer & Co., Moline, Ill., vice-president and A. D. Ziebarth, Davenport Foundry & Machine Co., Davenport, Iowa, secretary and treasurer.

COMING MEETINGS

April

National Metal Trades Association. April 15 and 16. Twenty-eighth annual convention, Hotel Astor, New York. J. E. Nyhan, Peoples Gas Building, Chicago, secretary.

American Zinc Institute. April 19 and 20. Annual meeting, Hotel Coronado, St. Louis. Stephen S. Tuthill, 27 Cedar Street, New York, secretary.

American Welding Society. April 21, 22 and 23. Annual meeting. Engineering Societies Building, New York. Miss M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

Foundry Equipment Manufacturers' Association. April 22 and 23. French Lick Springs, Ind. H. Cole Estep, Penton Publishing Co., Cleveland, secretary-treasurer.

American Electrochemical Society. April 22 to 24. Annual meeting, Chicago Beach Hotel, Chicago. Colin G. Fink, Columbia University, New York, secretary.

National Supply and Machinery Distributors' Association. April 26, 27 and 28. Twenty-first annual convention, Ambassador Hotel, Atlantic City, N. J. George A. Fernley, 505 Arch Street, Philadelphia, secretary-treasurer.

National Foreign Trade Council. April 28, 29 and 30. Thirteenth annual convention, Charleston, S. C. O. K. Davis, India House, Hanover Square, New York, secretary.

May

Iron and Steel Institute. May 6 and 7. Annual meeting, house of the Institution of Civil Engineers, Great George Street, London. G. C. Lloyd, 28 Victoria Street, London, S. W. 1, England, secretary.

Association of Chemical Equipment Manufacturers. May 10 to 15. Second Chemical Equipment, Machinery, and Process Engineering Exposition, Hotel Hollenden and Public Hall, Cleveland.

American Gear Manufacturers' Association. May 13 to 15. Tenth annual meeting, Book-Cadillac Hotel, Detroit. T. W. Owen, 2443 Prospect Street, Cleveland, secretary.

Joint Convention of American Supply and Machinery Manufacturers' Association, and Southern Supply and Machinery Dealers' Association. May 18, 19 and 20. Hotel Statler, St. Louis. J. D. Mitchell, 1819 Broadway, New York, secretary-treasurer.

American Iron & Steel Institute. May 21. Hotel Commodore, New York. E. A. S. Clarke, 40 Rector Street, New York, secretary.

American Iron, Steel and Heavy Hardware Association. May 25, 26 and 27. Annual meeting, Atlantic City, N. J. Benjamin R. Sackett, 502 Arch Street, Philadelphia, secretary.

SKILLED WORKERS COMING

More Than One-fifth of the Immigrant Aliens Are Skilled—Mostly in Prime of Life

WASHINGTON, April 10.—Immigrant aliens in February totaled 20,041, against 11,683 departing aliens, according to the Bureau of Immigration. Compared to the preceding month there was an increase in the number of alien arrivals and a decrease in the number of departures. Nearly half of the 20,041 immigrants arriving in February came from Europe. Germany, still leading the list from that continent, with 3244, furnished more than the combined total from Great Britain, Ireland, Belgium, Denmark, France and Switzerland.

Of the immigrants in February, 111 were listed as iron and steel workers and 30 as metal workers. The total number of skilled workers was 4142. About three-fourths of the present-day immigrants, according to the bureau, are in the prime of life, from 16 to 44 years old. The immigrants coming during the eight months ended with February were about equally divided as to sex. The present emigrant movement of aliens is largely of males, the men exceeding the women by over three to one.

Shipping More Industrial Machinery to Argentina

WASHINGTON, April 10.—The United States exported to Argentina industrial machinery valued at $6,461,000 during 1925, compared with $4,781,000 in 1924, an increase of more than one-third, according to the Industrial Machinery Division of the Department of Commerce. The greatest increases in the 1925 values were shown in the following classes: oil-well machinery, which rose to $1,234,769 from $677,343 in 1924; metal-working machinery, which increased to $324,803 from $214,889 during the preceding year; knitting machinery, exports of which totaled $454,086, compared with $380,491 in 1924; industrial sewing machines, which increased to $241,233 in 1925 from $145,721; refrigerating equipment; air compressors; pumping machinery; laundry machinery; power equipment and blowers and ventilators.

Decreases were experienced in internal combustion engines, road-making equipment, conveying and elevating machinery, excavators (including power shovels), mining and quarrying machinery, cotton gins, and flour and grist mill machinery. These declines, however, were more than offset by the increases mentioned.

Government Wins Suit Over Analysis of Surplus Steel

WASHINGTON, April 13.—Surplus war steel sold by the Government "as is without warranty and without recourse" means that the Government did not warrant that it was of the analysis set forth in its auction catalog. A decision to this effect has just been rendered by the United States District Court for the Western district of Pennsylvania in the case of the United States against the Allegheny Forging Co. The Government brought suit against the Allegheny Forging Co. to recover the purchase price of steel which was sold at auction after the war. The steel was described in the auction catalog as being of a certain composition but the terms of the sale provided that it was offered for sale "as is without warranty and without recourse."

The purchaser defended on the ground that an analysis of the steel made after the sale showed it to be a different composition than which it was described as being and that therefore the purchaser was under no obligation to pay for it. A statement by the Department in discussing the decision said in part:

"During the war the Government's need for supplies of almost every character was so great that in almost every instance it had to take what it could get and could not insist upon a rigid compliance with its peace time specifications. Furthermore, supplies had to be purchased in such large quantities and in so short a period of time that it was almost impossible for the Government to subject materials to more than a cursory and casual inspection. The result was that at the conclusion of hostilities the Government had on hand stocks of all kinds of materials, stored in warehouses throughout the country. There was no accurate knowledge of the quality or condition of this property, so that in offering it for sale it was essential that the Government sell it without warranty. The 'as is' clause was the method employed by the War Department for that purpose, and the decision in the Allegheny Forging Co. case indicates that it was well chosen."

Prize of $1,500 Offered for Economic Essay

WASHINGTON, April 13.—Announcement was made today by Alvin T. Simonds, Simonds Saw & Steel Co., Fitchburg, Mass., that the fifth of a series of annual essay contests on economics, for which Mr. Simonds is offering prizes of $1,500, would include as the topic for 1926, "Saving and Spending as Factors in Prosperity—with Special Reference to the Effect of Simplified Practice and the Elimination of Waste on the Standards of Living." The announcement by Mr. Simonds is signal recognition of the importance of simplified practice as a factor in the economic life of the nation. Information can be obtained by addressing Contest Editor, 470 Main Street, Fitchburg, Mass.

Troy Furnace Asks Lower Freight Rates

WASHINGTON, April 13.—Representatives of the Hudson Valley Coke & Products Corporation, owner of the new blast furnace at Troy, N. Y., appeared on Wednesday, April 7, before W. N. Brown, assistant traffic director of the Interstate Commerce Commission, in an appeal for lower freight rates on pig iron from the furnace to New England points. The Mystic furnace, near Boston, also was represented, as were the railroads. The conference was adjourned until April 27, at which time the New York, New Haven & Hartford expects to be able to present a rate structure it is willing to accept.

It was stated that the New Haven road has agreed to grant a rate of $3.25 from Troy to points east of the Connecticut River, which would be 40c. under rates from eastern Pennsylvania and 53c. under the present rate from Troy. The Troy interests want what they consider more equitable rates in relation to those from the Mystic furnace. Troy takes a blanket rate as against a mileage rate from Boston.

Benjamin Campbell, freight traffic manager for the New Haven road, pointed out that a change in the rate structure from Troy and Boston furnaces might bring about also a change in the rate from eastern Pennsylvania furnaces. N. L. Moon, traffic manager of the Alan Wood Iron & Steel Co., Philadelphia, speaking for eastern Pennsylvania pig iron producers, said that furnaces at Troy and Boston would restrict shipments from eastern Pennsylvania to New England, and that a good portion of that market has already been lost to the eastern Pennsylvania producers because of imported iron.

John S. Burchmore, representing the Troy furnace, said that Troy is discriminated against under present rates in favor of Boston, explaining by way of example that the rate from Boston to Hartford, Conn., 126 miles, is $2.65, while the rate from Troy to Hartford, 123 miles, is $3.78.

Coal Consumption Increasing

Industrial consumption of coal in February is estimated by the National Association of Purchasing Agents to have been 43,747,367 tons, compared with 41,892,000 tons in January. The February figure is the largest since October. Industrial stocks on hand March 1 are given as 60,015,000 tons, a sharp decline under the 66,190,000 tons of Feb. 1. Production of coal in February at 48,654,000 tons was only sufficient to cover industrial consumption and allow a scant 5,000,000 tons for all other uses. Being below requirements of other users, this accounts in part for the heavy drawing down of stocks during the month.

CONTROL OF MATERIALS PAYS

Intelligent Handling of Stocks Yields Economies Comparable with Those from Better Methods of Manufacturing and Distribution

MATERIAL has become a major limiting factor in the profitable operation of a manufacturing concern, and the decline and, in some quarters, elimination of jobbers and other risk-carrying middlemen have thrust back upon the manufacturer many functions of a merchandising character, thereby making him increasingly conscious of inventory accumulations and turnover and expense ratios. This was the conclusion reached in a preliminary report of material control and stores-keeping in foundries and machine shops made by Willis Wissler of the Bureau of Business Research of Ohio State University, Columbus, Ohio, to the Central Ohio Manufacturers' Association at Marion, Ohio, on March 17.

The problem of material control, according to Mr. Wissler, has raised the question of the degree to which devices now in use in merchandising are suitable for application in manufacturing control and the question of how sound and economical these devices are. In this two-fold analysis it was urged that the technician and statistician should have priority over the financier and the accountant.

Control of Materials Important in Declining Market

The more or less commonly expected decline of prices has been an added stimulus to a closer and more discriminating control of materials and stores. With the narrowing of profit margins and the continuous depreciation of inventories as prices recede, the wise purchase and control of materials can make as important a contribution to profits as savings in manufacturing or in distribution costs. The natural resistance of consumer markets in times of declining prices and the disposition of labor, in its present comparative scarcity, to resist wage reductions will tend to force the manufacturer more and more to seek his economies in shrewder buying, less purchasing for forward requirements, better forecasting and closer control of materials.

The change in the manufacturer's policy will manifest itself in greater economies in the administrative costs incident to material control and stores-keeping and greater flexibility in governing the quantities of stock carried and ordered. The present method of the General Motors Corporation was cited as a notable example of the benefits derived from flexibility in stocks and effective coordination of production with market behavior.

Two Kinds of Control Now Common

Too much weight must not be placed upon the preliminary findings, according to the report, since, in the absence of sufficient data, they are stated in qualitative rather than in quantitative terms. With this caution in mind, the report listed some qualitative conclusions. For example, the plans in operation in the 10 plants being studied owe their inception and development either to the imposition of a standard plan from above or to an opportunist and somewhat haphazard growth from below. Many of the older plans show traces of both.

In the former type the formal plan sometimes interferes with production, forcing a problem of adjustment on the foreman. The latter type, while having the advantage of being a natural and accepted plan of practice, is usually marked by overelaboration and an excess of checks and tests.

The intelligent method of studying the company as a unit is hampered by the claims and departmental restrictions of other well organized fields, such as accounting, cost-keeping and employment management. To circumvent these obstacles requires a comprehensiveness of view and a synthesis of the elements of the problem which are all too rare.

Diversity of Output Complicates Control Problem

The spread of "lateral integration," or the setting up of lines that seasonally dove-tail each other, within a single establishment adds further difficulty to the matter of material control, even though it is a logical solution for industrial irregularity due to seasonal fluctuations. It interrupts the regularly scheduled production with jobbing activities designed either to absorb idle machinery and overhead or to build up a supply or repair parts business.

As the result of Mr. Wissler's report, the association decided to have a committee cooperate with him in an advisory and critical capacity for the effective and authoritative prosecution of the study. The advantages of a wider sampling for the isolation of common practices and underlying principles peculiar to types of manufacturing were given favorable consideration.

The research is being carried on by the university bureau of which Dr. Spurgeon Bell is director. Mr. Wissler is in active charge of the field work.

MASTER BRAND SHEETS

Progress Being Made in the Adoption of the Guaranteed Product

Licenses to use the "Master Brand" stencil on galvanized sheets have been issued to several of the independent producers subscribing to the Sheet Steel Trade Extension Committee, and it is now possible to buy these sheets at a moderate advance over prices of the regular commercial grade, an advance being necessary because the steel is made to rigid specifications and carries a heavier coating than the regular grades. The brand name, which the committee has registered in the United States Patent Office, will be licensed to those manufacturers who conform to the quality standards set up by the committee for the various kinds of sheet steel. The stencil on any finish of sheet carries an assurance that they are of the highest quality possible of attainment following several years of scientific research.

The only standards thus for established are those for galvanized sheets for outside use and subjected only to ordinary forming processes. On account of the heavy coating of this sheet it is not recommended for severe forming processes. From time to time additional standards will be established for galvanized sheets for severe forming and for black, blue annealed and sheets of special finish.

So, for the present, the stencil will appear only on galvanized sheets and then only on sheets for ordinary forming. The brand is a guarantee to the public that the sheet is not lighter than No. 28 gage; that it is a prime sheet of the full gage stamped upon it; that it has been manufactured according to the best attainable practices and carries a coating 15 to 30 per cent heavier than the average commercial sheet. As a further guarantee, the committee is maintaining a corps of field men whose duty it will be to maintain standards by making tests at the mills and in the market.

Foundry Training in Los Angeles Schools

A school for the training of foundry apprentinces may be established in the Los Angeles public schools as the result of a conference between a committee of the Los Angeles Metal Trades Manufacturers' Association and the school authorities. If the project is approved one of the Los Angeles foundries will be utilized for the practical work. A move to educate Los Angeles foundrymen in cost keeping is also being fostered by the Los Angeles Metal Trades Manufacturers' Association.

The American Iron and Steel Institute will hold its next meeting at the Hotel Commodore, New York, Friday, May 21.

Predicts Trend Toward Steel Houses

Merits of Structural Steel Construction Emphasized by Steel Construction Institute Officers—Pacific Coast Cities Adopt Code of Standard Practice

SAN FRANCISCO, April 8.—Declaring that the time is rapidly approaching when structural steel will be used extensively in the construction of dwellings, and directing special attention to the series of articles now appearing in THE IRON AGE on the use of iron and steel for homes, Lee H. Miller, chief engineer of the American Institute of Steel Construction, speaking at a banquet attended by mill representatives, fabricators, engineers, architects and building contractors, April 7, at the Palace Hotel, here, advocated a larger and more intelligent use of structural steel for reasons of economy and public safety. The dinner was given under the auspices of the California Institute of Steel Construction. The toastmaster of the evening was Arnold Foster, assistant secretary-treasurer Bethlehem Steel Co.

Preliminary to his introduction of Charles F. Abbott, executive director of the national institute, who preceded Mr. Miller as the only other speaker of the evening, Mr. Foster advocated a broad application of the ethical standards of the institute for the correction of trade abuses.

Mr. Abbott outlined the purpose and organization of the institute and touched briefly on its code of standard practice, which he said has been adopted by 42 cities on the Pacific Coast. "Its general use," he stated, "will make possible further reductions in cost; and it will serve as a controlling factor over irresponsible practice, which is always a menace to public safety."

Tracing the progress of industrial development since steel came into general use, Mr. Miller emphasized the fact that modern civilization and its entire economic system is primarily based on the use of steel. He spoke at length on the technical and engineering phases of steel construction with special reference to its economy, durability and safety, and condemned the ultra-conservative attitude of certain classes of technical men who forget, he said, that the basis of scientific progress is intellectual curiosity and open-mindedness to experimental research. The elasticity of steel and its superiority as a construction material, he said, is a demonstrable fact that has not yet received the public recognition to which it is entitled.

Those at the speakers' table were as follows: Arnold Foster, assistant secretary-treasurer, Bethlehem Steel Co., toastmaster; Charles F. Abbott, executive director American Institute of Steel Construction; Lee H. Miller, chief engineer American Institute of Steel Construction; Prof. Bailey Willis, Stanford University, Palo Alto, Cal.; E. J. Schneider, United States Steel Products Co.; C. P. Hensley, Jones & Laughlin Steel Corporation; T. Ronnenberg, structural engineer, San Francisco; Clarence Ward, architect, San Francisco.

On April 6 Mr. Miller lectured before the civil engineering students at the University of California, Berkeley, and the following day before the school of civil engineering at Stanford University, Palo Alto.

On April 5 both Mr. Abbott and Mr. Miller spoke at a luncheon held at the Builders' Exchange, here, and that evening they attended a dinner given them by all of the San Francisco and East Bay fabricators, at which 11 Los Angeles fabricators also were present. Mr. Abbott was the principal speaker and devoted most of his talk to organization matters. He emphasized the necessity of fabricators doing more intelligent and aggressive selling, and more educational work in order to "create steel consciousness among engineers, architects, contractors and the general public." John L. Clymer, manager of the California institute, had charge of all arrangements, while Messrs. Abbott and Miller were guests in San Francisco.

Railroads in Good Condition

Trend in New Equipment Toward Units and Greater Tractive Power, Says Report on Rolling Stock

WASHINGTON, April 13.—Rolling stock of the railroads of the United States is in the best physical condition of recent years to handle transportation demands, according to reports received for 1925 from the carriers by the Bureau of Railway Economics. The report shows that during the past four years 10,105 new locomotives have been installed in service while 10,962 were retired. The decrease in the number of units installed is accounted for by the average tractive power for each locomotive in 1925 which was 40,625-lb. compared with 36,935-lb. in 1922, an increase of more than 10 per cent. Last year 3005 locomotives were retired, while 1733 new locomotives were installed. Those retired had an average tractive power of 32,394-lb., while those installed had an average of 52,792-lb., an increase of 63 per cent.

Approximately 43,000 more freight cars were installed in service during the four years ended with 1925 than were retired. The aggregate freight expedited last year, however, was 44.7 tons, compared with 42.5 tons in 1922, an increase of 5.2 per cent.

Class I railroads in 1925 retired 117,021 freight cars having an average capacity of 38.77 tons, or an aggregate of 4,537,287 tons, while they installed 125,760 cars having an average capacity of 47.37 tons, or an aggregate of 5,965,930 tons. The net gain in car units during 1925 was only 8789 but the net gain in aggregate capacity was 1,419,643 tons.

"This improvement in equipment condition, in combination with the increased capacity of the plant and more efficient basis of operation, put the carriers in the position of having at all times during 1925 a surplus or reserve amount of equipment sufficient to guarantee that whatever further traffic was offered, the increase could and would be handled with corresponding effectiveness," said the bureau's statement.

Largest March Construction on Record

March of this year showed the largest volume of construction contracts of any March on record, according to figures compiled by F. W. Dodge Corporation. With the exception of August, 1925, the March total was the highest for any month in our building history. The total in 37 States east of the Rocky Mountains was $597,879,000. The increase over February was 53 per cent; over March of last year, 22 per cent. Residential buildings at $262,644,000 accounted for 44 per cent of the total. Commercial buildings were $108,812,000; public works and utilities, $100,603,000; industrial buildings, $48,677,000, and educational buildings, $29,080,000.

Total construction begun during the first quarter amounted to $1,444,938,000, an increase of 30 per cent over the first quarter of 1925, and correspondingly above the first quarter for 1924. Except for New England and the Pittsburgh district, the gain has been general. It was particularly heavy in New York and Northern New Jersey and in the Southeastern States, especially Florida. Gains in both these cases, as compared with last year, were more than 70 per cent for the first three months.

A sintering plant will be installed by the Steel Co. of Canada, Ltd., at its Hamilton, Ontario, works. This will be of the Greenawalt type with a 10 x 24-ft. pan. It will be provided with labor-saving and dust eliminating devices and various modern refinements. Arthur G. McKee & Co., Cleveland, are the engineers and contractors.

Pig Iron In Europe Continues Firm

British Iron Quiet But Control Maintains Cleveland Prices —Two Welsh Mills Suspend—Continental Steel Lower

(*By Cable*)

LONDON, ENGLAND, April 12.

The coal situation is uncertain and further trouble in the engineering plants is threatening. Pig iron is quiet but Cleveland prices, which are controlled, are being maintained, while other makers are willing to make concessions. Hematite continues dull and shutting down of some furnaces is anticipated shortly. Foreign ore is still quiet, with Bilbao Rubio nominally 21s. to 21s. 3d., c.i.f. Tees.

But little fresh business is developing in the finished iron and steel markets, consumers preferring to wait until the labor situation has cleared. Sales are consequently restricted to bare necessities.

Continental steel prices are weaker as a result of further depreciation of the franc, but foreign pig iron is being maintained at the previous levels. Japanese consumers have bought merchant bars at £5 2s. 6d., f.o.b. Antwerp, and there have been a number of small lots of sheets and wire purchased for shipment to South American markets. The Société Anonyme des Acieries de Micheville in France has secured a 16,000-ton rail contract from Latvia. Unconfirmed reports are that the French Comptoir Siderurgique has been re-established. Tin plate is dull with prices down to 19s. 1½d., base per 100 lb. box, f.o.b. works or port. Inquiry is moderate but the scarcity of substantial orders makes sellers apprehensive of the future. The Kidwelly Tin Plate Co., Kidwelly, Wales, is closing and the Llanelly Steel Co., Llanelly, Wales, is suspending as a result of competition. Galvanized sheets are easier with only small sales and substantial demand lacking. Black sheets continue quiet.

British Control of Cleveland Iron Prices Successful—Shipbuilding Improved

LONDON, ENGLAND, April 1.—The iron and steel markets continue quiet. The removal of a possible labor disturbance in the engineering industries has lessened the previous tension, but buyers and sellers alike are still confronted with the coal problem. With these uncertainties prevailing, therefore, buying continues on a hand-to-mouth basis. The control of Cleveland pig iron prices has maintained values, and as output is limited and production going directly into consumption, the lack of new orders is not of much importance. In other districts, however, such as the Midlands, where there is no price control and demand is poor, weakness has developed and furnaces are quite willing to book orders at from 6d. to 1s. a ton concession.

Semi-finished steel is entirely under the influence of Continental competition, so that large tonnages of foreign billets and sheet bars have been bought for use in this country. Continental markets, however, have become somewhat disorganized by the political situation in France and Belgium, and a few orders for prompt delivery have been coming to British mills. The steady decline in finished steel prices and the keen competition for plate business in all districts has caused the Steel Makers Association to endeavor to protect makers from each other by reinstating minimum plate quotations on domestic and export sales and minimum structural prices for export only.

Considerable interest has been aroused by the various negotiations of European steel makers, which have been proceeding on the Continent, but few reliable reports are issued and many are denied soon after publication. It seems clear, however, that the various rail mills have entered an agreement, which it is expected will be ratified when the parties concerned meet again about the middle of this month. The Ruhr Steel Corporation also seems to be a more or less accomplished fact. There is now discussion of Continental control of the semi-finished iron and steel market, but no definite information is yet available. All these developments and uncertainties naturally tend to restrict the general volume of current business. On the other hand, some branches of the steel industry here are distinctly busy, notably the structural and engineering

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £ as follows:

Durham coke, del'd	£0	19s.		to £0	19½s.	$4.62	to	$4.73
Bilbao Rubio ore†	1	1½				5.22		
Cleveland No. 1 fdy.	3	12½	and	3	13*	17.62	and	17.74*
Cleveland No. 3 fdy.	3	10	and	3	10½*	17.01	and	17.13*
Cleveland No. 4 fdy.	3	9	and	3	9½*	16.77	and	16.88*
Cleveland No. 4 forge	3	8	and	3	8½*	16.52	and	16.65*
Cleveland basic	3	10	and	3	10½*	17.01	and	17.13*
East Coast mixed	3	16½	to	3	17	18.59	to	18.71
East Coast hematite	4	19				24.06		
Ferromanganese	15	10				75.33		
*Ferromanganese	14	5		to 14	10	69.25	to	70.47
Rails, 60 lb. and up	6	15		to 7	5	32.80	to	35.24
Billets	6	0		to 7	10	29.16	to	36.45
Sheet and tin plate bars, Welsh	6	5				30.38		
Tin plates, base box	0	19¼	to	0	19¼	4.64	to	4.69
Black sheets, Japanese specifications	14	12½				71.08		
						C. per Lb.		
Ship plates	7	0		to 7	10	1.52	to	1.62
Boiler plates	11	0		to 11	10	2.39	to	2.49
Tees	7	2½	to	7	12½	1.55	to	1.68
Channels	6	7½	to	6	17½	1.38	to	1.48
Beams	6	2½	to	6	12½	1.32	to	1.43
Round bars, ¾ to 3 in.	7	12½	to	8	0	1.65	to	1.76
Steel hoops	10	10	and	11	0*	2.28	and	2.39*
Black sheets, 24 gage	11	5		to 11	10	2.35	to	2.49
Galv. sheets, 24 gage	15	10		to 15	12½	3.36	to	3.39
Cold rolled steel strip, 20 gage	18	0				3.91		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	5s.				$15.80		
France	3	5				15.80		
Luxemburg	3	5				15.80		
Basic pig iron: (a)								
Belgium	3	1½				14.94		
France	3	1½				14.94		
Luxemburg	3	1½				14.94		
Coke	0	18				4.37		
Billets:								
Belgium	4	7		to £4	10s.	21.26	to	$21.87
France	4	7		to 4	10	21.26	to	21.87
Merchant bars:						C. per Lb.		
Belgium	5	2½	to	5	9	1.13	to	1.20
Luxemburg	5	2½	to	5	9	1.13	to	1.20
France	5	2½	to	5	9	1.13	to	1.20
Joists (beams):								
Belgium	4	16	to	4	17	1.06	to	1.07
Luxemburg	4	16	to	4	17	1.06	to	1.07
France	4	16	to	4	17	1.06	to	1.07
Angles:								
Belgium	5	2	to	5	4	1.12	to	1.15
⅛-in. plates:								
Belgium	5	17	to	6	1	1.29	to	1.33
Germany	5	17	to	6	1	1.29	to	1.33
⅜-in. ship plates:								
Belgium	5	7½	to	5	10	1.18	to	1.21
Luxemburg	5	7½	to	5	10	1.18	to	1.21
Sheets, heavy:								
Belgium	6	3	to	6	4	1.35	to	1.37
Germany	6	3	to	6	4	1.35	to	1.37

(a) Nominal.

branches, chiefly on building construction and reconstruction of the railroads which, after all, provide only a small proportion of the total business needed to keep British iron and steel plants sufficiently employed.

Speaking recently at the annual conference of the Institution of Naval Architects, the Duke of Northumberland said everyone had hoped that before this the tide in the shipbuilding industry would have changed, but although there is still a lack of orders and many empty berths, the industry has escaped the worst of the industrial crisis. He thought that there were signs of a possible improvement during the coming year, and the number of orders for new merchant ships, which had been placed during the past few months led to the hope that the point had been reached where a gradual recovery might be expected. The orders placed might not be highly remunerative or cause an increase in employment, but they gave assurance that those who would be discharged on the completion of the work already in hand would not find the shipyard doors closed against them. Some of the orders, he said, had been obtained in spite of severe foreign competition, and showed that industrial and financial conditions abroad were no longer as unfavorable to British competition with Continental shipyards as they had been.

DEPRESSION IN BELGIUM

Lower Prices on Steel for Export Reduce German Competition—Pig Iron Continues Firm

ANTWERP, BELGIUM, March 27.—In many markets business is almost at a standstill, with desirable orders extremely scarce, purchasers being inclined to await further developments before committing themselves further. Particularly in foreign trade is this reserve of buyers evident, purchasers for export preferring to await the expected developments in the exchange situation. As a result of this situation prices are developing greater weakness as mills, with few exceptions, become more anxious to refill their depleted order books.

Determination of the market price on any grade of steel is exceedingly difficult, quotations varying widely, dependent upon the size of the order and the need of the mill taking the business. While the dearth of business has reacted unfavorably in some markets, in others this lack of any tonnage inquiries to test the market have permitted the maintenance of prices at perhaps a higher level than would have otherwise been possible.

The recent wave of German competition on most steel products is apparently receding as Belgian and French mills begin to meet the slightly lower export prices quoted by the German mills. Luxemburg makers are beginning to compete seriously for large tonnages, especially in bars, and French mills are reappearing with lower prices. In the meantime German sellers are evidently not inclined to meet this further drop in world market prices. In the meantime, further decline of the franc has caused higher domestic prices and Belgian consumers hesitate to make further purchases at present.

Pig Iron.—Unlike the steel markets, pig iron continues firm, although the volume of business in the market at present is small. Recent advances in price have been the result of the lower value of the franc. Foundry iron is rather generally quoted at 390 to 400 fr. per ton, delivered consumers' works or f.o.b. Antwerp. With Belgian, French and Luxemburg furnaces all well booked with tonnage and the agreement of these makers on maintenance of prices and selling conditions, prices are expected to continue stable.

Semi-Finished Material.—Domestic purchasing of billets, blooms and slabs is unimportant, buyers being unwilling to pay the current prices quoted by the mills, claiming that the further depreciation of the franc warrants some reduction. Export demand is also smaller. Bloom prices are not to exceed £3 19s. to £4 per metric ton, billets are scarce and slightly firmer at £4 8s. per ton ($21.55) and slabs are on a lower level than recently at about £4 11s. 6d. per ton ($22.55), all f.o.b. Antwerp.

Finished Material.—Although the market is more stable than in the early part of the month, but little business is being placed and the tendency is still toward weakness. Depreciation of the franc and the growing need of mills for more tonnage to maintain their operating rates, resulted in concessions offered both to domestic consumers and export sellers. Buyers, however, expect still greater reductions and refrain from purchasing except for immediate requirements. This situation is not confined to Belgian mills, both Luxemburg and French works being in the market in search of sufficient business to maintain their operations at the present level. Bar prices have weakened perceptibly with the usual quotations at about £5 4s. per ton and business possible at £5 3s. per ton ($26), f.o.b. Antwerp. With most mills fairly well engaged on beams the price is slightly firmer at £4 16s. 6d. per ton ($23.65), f.o.b. Antwerp. Corrugated bars are quoted at £5 12s. per ton ($27.45), wire rods at £5 15s. per ton ($28.20), and steel hoops at about £6 17s. per ton ($35.55), all f.o.b. Antwerp.

Sheets.—The tendency is toward lower prices, although mills are resisting any further reductions with fair success. Demand, however, continues small and French competition is developing into a serious factor. Thomas grade, 3/16-in. sheets have been sold as low as £5 8s. per ton ($26.45), which is 6d. to 1s. per ton lower than the quoted level of prices and light gage sheets of 1/16 in. are held at £8 5s. per ton ($40.45), f.o.b. Antwerp.

STEEL IMPORTS ACTIVE

European Mills Refuse to Quote on Rails for the United States—Export Trade Quiet

NEW YORK, April 13.—Importers of European steel products continue active in quoting on numerous small lots for which consumers not far from seaboard are in the market. A profitable volume of purchasing is reported. One sale of the past week covered about 1600 tons of deformed steel bars for New England. Reinforcing bars are apparently in greater demand than structural material, and prices on the structural grade continue as low as 1.70c. per lb., c.i.f. Atlantic port, duty paid, with the possibility that even this price may be shaded slightly on a firm offer of a large tonnage. It is claimed in some quarters that the low prices represent an expectation of entering the bars as structural shapes for building use, thereby paying a duty of 20c. per 100 lb. instead of the regular bar duty of 30c.

A few small orders for bands have been negotiated recently in the New England district. Belgian nails are being offered at about $2.25 per keg, c.i.f. Atlantic port, but no purchases of consequence are noted. German wire nails are apparently still held at about $3 per keg, c.i.f., duty paid. One German importer representing a large mill is offering box annealed black sheets at 2.35c. per lb. base, c.i.f. duty paid.

A contract for a reinforced concrete sea wall at Maracaibo, Venezuela, recently awarded to the Raymond Concrete Pile Co., involves about 4000 tons of deformed steel bars, which it is expected will be purchased from Continental mills at about $38 per ton, c.i.f. Maracaibo. James M. Motley, 43 Cedar Street, New York, is reported to have booked a contract for building material going into a building in Mexico, a small tonnage of structural material being included.

No Rail Bids by Continental Mills

While there has been a number of small inquiries for rails from short line railroads, quotations on the foreign product being acceptable, importers do not expect to secure any of this business because of the attitude of the European mills. Among these small tonnages was a lot of a few thousand tons of rails for a road in Texas and an inquiry for 6000 to 7000 tons of 80-lb. sections for the Georgia & Florida Railway, Augusta, Ga. Apparently since the tentative formation of the International Rail Makers Association, Con-

tinental mills have steadfastly refused to quote on any rail inquiries from the United States, claiming to be well filled with business and not interested. In one instance, an importer points out that a small tonnage of rails for a Pacific Coast railroad, on which a German mill had quoted about a month ago, was offered to the bidder at his original price and conditions, only to be rejected.

Chinese Boycott Continues

Exporters to the Far East report only a moderate volume of business. Chinese buying continues small with occasional purchases of tin plate, galvanized sheets and wire shorts. The second hand plates and other material from ships being junked at Shanghai are being sold in China at prices equivalent to about $22 per ton, c.i.f. Shanghai, which precludes the sale of any such material from the United States. While there are a number of desirable appearing inquiries in the market from the Canton district, exporters to China hesitate to assume any risk on possible sales because of the political situation there. The business of British concerns in Hong Kong, the normal port of transshipment for Canton, is still at a low ebb, as a result of the dock workers' strike and the boycott by Cantonese. Canton merchants have been specifying shipment either to Shanghai for transshipment direct to the undeveloped port of Whampoa, near Canton, or direct shipment to Whampoa, which requires delivery with light draft vessels. In addition to the difficulties of shipping there is claimed to be danger of seizure of cargoes by the striking dock workers, as has occurred in a few instances.

A few small inquiries for tin plate are in the market from Japan and the Hokushinkai Oil Co. is in the market for about 60,000 ft. of line pipe. The pipe is expected to go to some European maker, recent quotations on pipe, such as a purchase not long ago by the Nippon Oil Co. of a considerably larger tonnage, having shown Continental prices, delivered Japan, to be about 5 per cent under the lowest possible price of mills in the United States. The divergence of American and Welsh tin plate prices continues. Light gage black sheets are still at about $83 per ton, c.i.f. Japan, from the United States, and about $80.25 per ton, c.i.f. from Great Britain.

European Cartel of Enameled Ware Manufacturers

WASHINGTON, April 6.—Following a conference of representatives of the German, Austrian, Polish, Hungarian and Czechoslovak enameled ware industries, which was held at Berlin, announcement has been made of the reestablishment of a European cartel on this product, according to a report to the Department of Commerce from Commercial Attaché Hodgson, Prague, Czechoslovakia. To date the membership is said to consist of representatives of the Austrian, Polish, Hungarian and Czech industries, but negotiations are now taking place in Prague looking toward the inclusion of the Spanish, French and Roumanian industries in the organization. It is also anticipated in Czechoslovak business circles that the German and British manufacturers will eventually join.

Cuba Removes Duty Surcharge on Bar Imports

WASHINGTON, April 13.—All iron or steel bars imported into Cuba for manufacture are exempt by a presidential decree of Feb. 4, 1926, from the surcharge of 30 per cent of the import duty imposed by a decree of Feb. 1, 1904, according to a report received by the Department of Commerce. This 30 per cent increase in the tariff rates on iron or steel bars was later partially removed by a decree of Jan. 26, 1910, for such material when imported for the manufacture of structural iron, rivets, screws, nuts, nails, etc. The latest decree provides for this exemption in all cases where the material is to be used in domestic manufacturing processes of any nature.

FRENCH OUTPUT LOWER

Short Month Reduces Production of Iron and Steel—United States Receives Small Part of Exports

PARIS, FRANCE, March 27.—The number of furnaces in blast in France during February showed a decline of three from the January figure of 149. There were 40 furnaces under construction or repair compared with 43 in January and 33 capable of being blown in compared with 27 in January.

Production of pig iron declined from 762,810 metric tons in January to 706,514 metric tons in February, but the daily average showed a slight increase as a result of the short month, the February figure being 25,200 tons per day compared with only 24,600 tons in January. Of this total 523,535 metric tons was basic, 166,679 tons foundry and forge iron and 14,511 tons special grades.

The steel ingot production in February was 630,348 metric tons, compared with 660,566 tons in January. Of this total 434,945 tons was basic Bessemer and 182,832 tons open hearth steel.

Of the total exports of pig iron in February, 68,486 metric tons, only 5405 tons went to the United States and of 170,493 tons of finished and semi-finished material exported only 4299 metric tons went to American buyers. Exports of iron ore totaled 857,440 metric tons, none of which went to consumers in the United States.

Americans to Participate in Tiflis Exposition

WASHINGTON, April 10.—American firms and corporations, including manufacturers of agricultural machinery, have shipped their products for exhibition at the international exposition to be held in Tiflis, in the Soviet Republic of Georgia, May 1 to June 30, according to an announcement by the Russian Information Bureau. Other American exhibitors will ship their offerings on the steamship Betty Maersk, which will begin loading for Batum at Stapleton, N. Y., in a few days.

Among the concerns whose products are already en route for Tiflis are the Ford Motor Co., New York; International Harvester Co., Chicago; New Holland Machinery Co., New York; Oliver Chilled Plow Works, South Bend, Ind.; Stover Mfg. Co., Freeport, Ill.; Allis Chalmers Mfg. Co., Milwaukee; American Saw Mill Machinery Co., New York; American Seeding Machinery Co., Springfield, Ohio; Athens Plow Co., Troy, Ohio; Burch Plow Works, Crestline, Ohio; Cleveland Tractor Co., Cleveland; Cockshutt Plow Co., Brantford, Canada; Detroit Harvester Co., Detroit; Ellis-Keystone Agricultural Works, New York, and Emerson Brantingham Implement Co., Rockford, Ill.

Most of the manufacturers have sent their products through the Amtorg Trading Corporation of New York.

World Manganese Ore Consumption in 1925

Imports of manganese ore in 1925 by the five leading steel-producing nations offer some interesting contrasts. The data are as follows, the total imports being given in tons, with percentage of the total as imported by each country:

	Total	Per Cent
United States	531,300	31.60
Great Britain	278,600	16.50
France	470,700	28.00
Germany	199,400	11.90
Belgium-Luxemburg	200,100	12.00
	1,680,100	100.00

The surprising feature is the large importation by France of about 470,700 tons. Great Britain, which is a large exporter of ferromanganese, did not import last year very much more than either Germany or the Belgian-Luxemburg industry.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Current Statistical Data, Considered Independently of Trade Opinion, Indicate That:

THE present high rate of steel production is not likely to continue.

Semi-finished steel markets seem to favor the buyer at present.

Steel ingot production is about 15 per cent above estimated normal requirements.

Pig iron production is approximately 16 per cent above estimated normal requirements.

Lower prices for iron seem to be in prospect.

No sharp break in steel prices is apt to occur in the near future.

WITH the heaviest steel consuming industries operating at a high rate, the steel producers turned out a record-breaking product in March. Even allowing for the usual monthly ups and downs which arise on account of seasonal conditions and the different number of working days, the March output was large, though not strictly a record. Our adjusted index shown in Fig. 1, not only allows for seasonal variation, but for the normal steady growth in the requirements of the country. *In spite of these deductions, the March index is the highest for that month which appears on any year shown in the chart.*

The March figure brings the rate of steel ingot production to a point nearly 15 per cent above the estimated normal requirements of the country. This compares with an excess of 9.3 per cent in February and 9.4 per cent in March, 1925.

The adjusted March index of steel ingot production, however, is far below the peak levels reached in 1923, 1924 and 1925. In other words, part of the large output represented the normal growth of the industry and part the usual gain for the month of March.

Evidently the current demand for steel has been extraordinarily large. There is no indication of any large accumulation of stocks of steel, while buyers have on the whole been holding off with the idea that prices are more likely to decline than to advance. Under the circumstances, large production must have meant large consumption, though not necessarily in the same proportion.

Nevertheless, it is doubtful if so high a rate of production can continue. New business has certainly not kept up with production. Current reports indicate that while activity in important steel consuming lines continues large, it is not expanding. A considerable gain in forward buying would be required to maintain production at the current rate and the general feeling that some curtailment is at hand appears to be justified.

The unfilled orders of the Steel Corporation at the end of March showed a decline of 236,887 tons, which brought them to the lowest point since last October. Rarely, if ever, has so large a decline in unfilled orders, extending over a three-month period, occurred without a weakening in steel prices. From one point of view, however, a little encouragement may be drawn from the unfilled orders figures, for the *rate* of decline in March was not so rapid as in any of the preceding months, and a change of this kind often marks the approach of a turn for the better in the steel industry.

THE IRON AGE composite price of finished steel averaged 2.433c. in March against 2.428c. in February—a small advance. The March figure compares with 2.537c. a year ago.

Some Weakness Probable

WHILE the steel market has been well maintained, our opinion as previously expressed is repeated: Everything points to the development of a little weakness in the steel prices. The general trend of commodity prices is downward; steel production is above normal; unfilled orders are declining; the markets for pig iron and steel scrap are lower. It will be extraordinary, if under the circumstances, lower prices do not develop during the month.

In this connection, attention is called to reports that in the East, at least, consumers appear to have accumulated comfortable supplies of steel. The semi-finished steel markets seem to favor the buyers at present. Evidently in a good many cases the first quarter contracts proved to be in excess of requirements, and as specifications were full, the needs of the buyers are now well cared for.

Pig Iron Output High

AS in the case of steel, the production of pig iron increased in March, the total of 3,441,000 tons being a gain of over 17 per cent from the preceding month. The usual seasonal increase would be about 11½ per cent. Our adjusted index indicates that the

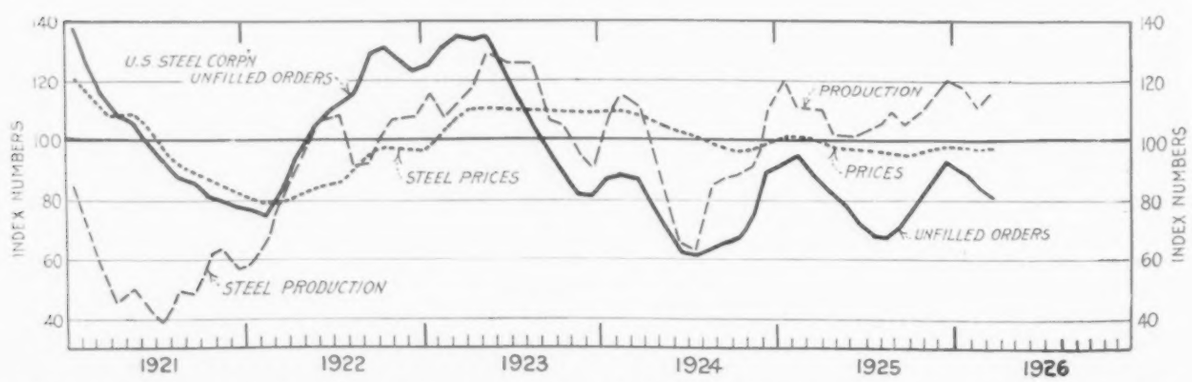


Fig. 1—Aside From the Usual Seasonal Increase in Steel Ingot Production, March Output Showed a Distinct Upward Trend Which Is Partially Explained by the Continued High Consumption of Steel

In This Issue

Daily rate of steel ingot production in March broke all records.—166,359 tons per day was 4.9 per cent above February; monthly total estimated at 4,491,689 tons, 275,000 tons above previous record.—Page 1085.

Eight large companies shipped more steel last year than in 1923 *but earned considerably less.*—Gross sales amounted to $6.66 less per ton of steel shipped last year; (average of eight companies) earnings drop from $128,880,443 to $104,156,567; net earnings per ton shipped $1.40.—Page 1080.

Lower prices for pig iron seem to be in prospect.—No sharp break in steel prices is likely to occur in near future.—Page 1076.

Steel ingot production about 15 *per cent above estimated normal requirements, pig iron about* 16 *per cent above.*—But present high rates of output are not likely to continue.—Page 1076.

United States uses 30 *times as much steel per capita as countries in Pacific area.*—Our population uses about 530 lb. of steel per person each year; Oriental and South American countries about 17 lb. per capita.—Page 1060.

Use of farm machinery liberates 18,000,000 *people for other tasks, says National Industrial Conference Board.*—Average farm worker today uses five times as much machinery as farm hand of 50 years ago; value of farm machinery rose from $36 per worker in 1870 to $176 in 1920.—Page 1068.

Average iron content of Lake Superior ores being well maintained, while beneficiation steadily lowers moisture content.—Manganese content increases, while phosphorus percentage is about the same.—Page 1068.

Arc welding seams and resistance welding of bottom of ice cream cans saves production time as well as labor and material.—Chicago plant turns out 432 cans a day on automatic arc welding machines.—Page 1047.

In determining quality of large steel ingots, knowledge of melting and pouring practice may help more than exact chemical analysis.—Determination of nature of inclosures or composition of occluded and absorbed gases of great importance.—Page 1049.

Electric blooming mill drive installed to replace steam engine drive in 13½ *working days.*—Engine weighing nearly 1,000,000 lb. removed within 24 hr.; new equipment saves time of one man besides improving production of mill.—Page 1051.

Claim cast iron pipe made by centrifugal process shows 40 *per cent higher hydrostatic resistance than ordinary sand cast material.*—20 per cent greater shock resistance also claimed.—Page 1055.

W. B. Schiller, president National Tube Co., retires, and Taylor Allderdice, vice-president, succeeds him.—After 43 years connection with iron and steel industry, executive relinquishes position held for 24 years.—Page 1081.

Speculative stage of stock market activity is over.—Transactions now chiefly represent investment buying; future of securities market depends on business situation.—Page 1082.

Last month construction contracts awarded were larger than for any other March.—Total construction begun during first quarter (in 37 states) was 30 per cent over corresponding period last year.—Page 1072.

Railroad rolling stock now in best physical condition in years.—Average tractive power of locomotives put in service shows gain of 63 per cent.—Page 1072.

Use of steel for freight cars probably consumes about 5 *per cent of rolled tonnage.*—Used to be considered an important factor in steel trade prosperity; tonnage item smaller than formerly.—Page 1084.

The time is rapidly approaching when structural steel will be used extensively in the construction of dwellings.—Says Lee H. Miller of American Institute of Steel Construction in San Francisco; superiority of steel as construction now a demonstrable fact.—Page 1072.

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Metallurgical Milestones in Centrifugal Casting Processes

DEVELOPMENTS in centrifugal casting of metals have been rapid in the last 10 years. In THE IRON AGE of Sept. 7, 1916, was given the first description of the Delavaud process for making cast iron pipe centrifugally. The present issue offers our readers an account of the latest in the centrifugal method. In the 10-year intervals readers of THE IRON AGE have been kept informed regarding each step in the development of all the processes, both domestic and foreign, including the making of pipe, piston rings and special castings in iron, steel or non-ferrous metals. This printed record, as are those of parallel movements, is an illustration of THE IRON AGE recognition of its obligation to cover completely metallurgical as well as economic and commercial progress in the field of metals and metal working.

For News Summary See Reverse Side

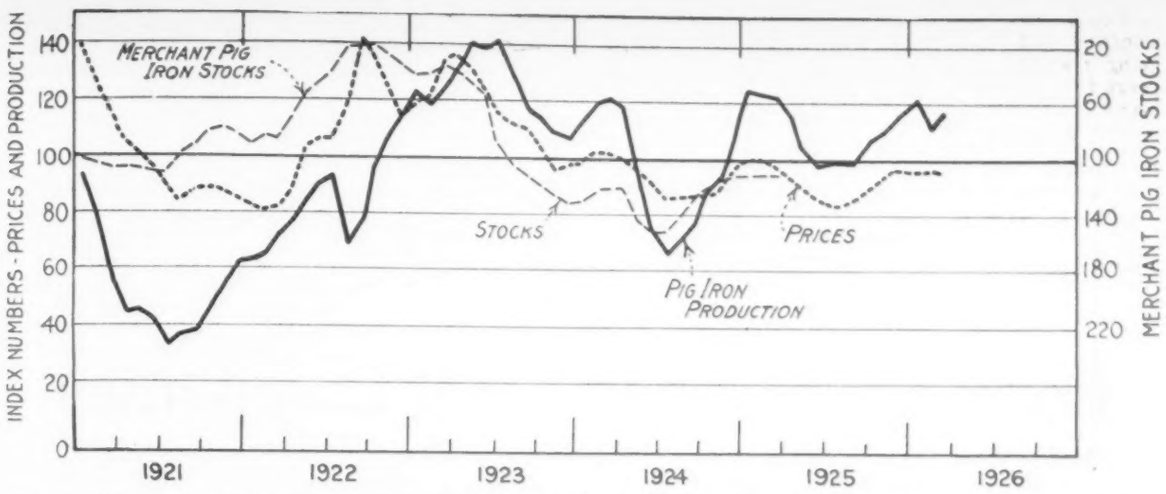

Fig. 2—Though the High Rate of Steel Production and Consumption Somewhat Justifies the High Output of Pig Iron, Some Decline in the Trend of Production Seems Probable

March pig iron output was 16 per cent above the normal trend line, which compares with an excess of 11 per cent in February and 21 per cent in January.

It must be recognized, however, that the demand for steel has been large accompanied by a correspondingly large production and that accordingly an abnormal rate of pig iron production has been justified.

The most serious consideration now is the fact that pig iron output has again shown a tendency to outrun steel production. The ratio of our adjusted index of iron production to that for steel became larger in March. This condition usually brings cheaper iron. The increased number of furnaces in blast, coming at a time when the outlook for further expansion in demand is not bright, certainly suggests the danger of overproduction. The number of furnaces in blast is now well over 63 per cent of the total. This is probably the largest percentage since March, 1924.

As shown in Fig. 2, the March average of pig iron prices was only slightly lower, the figure being $21.40 per ton against $21.52 per ton in February. In the first week of April, however, the price dropped sharply to an average of $20.71 per ton, and further reductions have been reported.

With the current high rate of production, and with buyers holding off as they are, lower iron prices would seem to be in prospect. Foreign iron continues to be a factor in the weakness of the pig iron market in the East and a good many of the recent larger transactions reported at Boston, New York and Philadelphia, have involved the imported product. The large supply of scrap and the weakness of old material, together with the reduced demand for steel, are also important unfavorable considerations.

Commodity Price Trend Down

ONE thing is clear and that is that the trend of the general commodity price level is downward and has been so ever since December (See Fig. 3). The Bradstreet index showed a decline of 2.2 per cent during March. It was approximately 9 per cent lower on April 1 than on Dec. 1.

On the other hand, THE IRON AGE finished steel index has been practically unchanged for four months and has actually firmed up a little bit recently, being 2.439c. in the week of April 6, against an average of 2.433c. in March. This leaves steel prices in an unusual position: they are holding against the general trend of commodities. Such a situation occurred at the peak of business in 1920 and again at the April peak in 1923. In both cases, however, a sharp break ultimately ensued. May such a development be expected in the present case? We think not—some reduction will probably occur, but no sharp break. Reasons for this conclusion are that steel prices are now much nearer bed-rock than in the earlier periods mentioned. Moreover, they are not so much out of line with the general level of prices. The student of statistics must conclude that some reduction lies ahead, but he must also conclude that it should be very moderate.

The probability of a downward trend is strengthened by the recent break in pig iron prices (which is as forecast in this department). Rarely does steel hold up long with pig iron prices moving downward. At the same time, the improbability of any large decline is emphasized by the fact that pig iron prices are low compared with past levels and are accordingly holding up stubbornly.

The price of heavy melting steel scrap, as shown

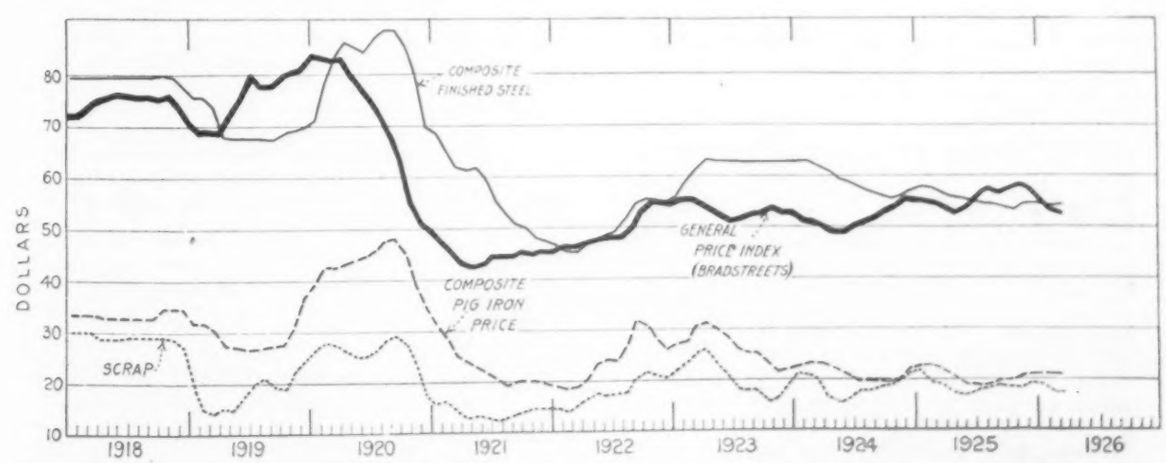

Fig. 3—The General Trend of Commodity Prices Has Been Downward Since December, and It Might Be Inferred That Steel Prices Are Accordingly Due for a Sharp Drop, but This Is Not Likely Since Steel Prices Are Much Nearer Bed-rock Than in Previous Periods When a Break Did Occur

in Fig. 3, usually leads the price of steel and the considerable decline since November supports the foregoing reasoning. Everywhere the scrap market appears to be weak, the supply being large and the demand very dull. The most hopeful thing about the scrap market from a statistical point of view, is the fact that the *rate* of decline in prices has been checked. Such a development as in the past usually meant that the bottom is not far off.

It is interesting to note that the spread between steel, pig iron, and scrap, as illustrated in Fig. 3, were almost exactly the same as at the peak in April, 1923. At that time the *spreads* were the same as recently, only the prices were all higher. In the 1923 period, steel prices remained stable for several months, while pig iron and scrap declined. The present situation indicates a similar development, though any large decline seems impossible due to the existing low levels.

The most certain development seems to be further weakness in pig iron, as it is still out of line in comparison with coke on the one hand, and with bars and billets on the other. Coke at $3 and bars at 2c. are similar to the May, 1925, levels; but in May, 1925, pig iron was considerably lower than now.

Earnings of Eight Steel Companies

Profits Per Ton Considerably Lower Than in 1923—Drop of 20 Per Cent in "Common" Earnings on Greater Tonnage Output

WITH a shipment total slightly in excess of that of 1923, earnings on common stock of eight large steel companies*, comprising 73 per cent of the ingot capacity of the United States, amounted to $104,156,567, compared with $128,880,443 in 1923. This drop of 20 per cent reduced the earnings per share of common stock from $11.85 to $9.58.

Something of the shrinkage in earnings may be judged from the fact that gross sales, which amounted to $1,804,000,000 in 1923, or $78.46 per ton of steel shipped, were reduced to $1,714,000,000 in 1925, or only $71.80 per ton of steel shipped. The shipments involved were 22,988,000 tons in 1923 and 23,874,000 tons in 1925. It must be understood that, in a few cases where certain pieces of information were missing, estimates had to be made in filling out some of these figures.

Net earnings, after allowing for depreciation and interest, amounted to $144,930,000 in 1925, or $6.07 per ton shipped. This compared with $171,750,000 in 1923, or $7.47 per ton.

Little change had taken place during the two years in the capital structures, there having been addition of approximately 1 per cent in outstanding preferred stock and a much smaller addition in common stock. Dividends during the two years were about $44,750,000 on common stock in each case, this being about 4.56 per cent.

Total assets, as shown on the balance sheets, changed less than 1 per cent, having been $3,986,581,661 in 1925. Total value of plants, after depreciation, increased from $2,644,000,000 to $2,742,000,000. Inventories had been reduced a little less than 2 per cent, standing in 1925 at $500,630,000. Net working capital (current assets minus current liabilities) has increased about ½ per cent, standing at the end of 1925 at $796,400,000. Ingot production was slightly less in 1925, in spite of the increased total of steel shipped. As a result the utilization of capacity, based on ingot figures, dropped from 80.3 to 79.2 per cent.

Payrolls showed a slight shrinkage, from $743,000,000 to $732,000,000. The number of employees, 412,000 in 1923, became 400,000 in 1925. While the total payroll per man increased from $1,805 to $1,829, the amount of payroll involved in each ton of steel shipped was reduced from $32.34 to $30.65. This resulted from the intensive efforts put forth to reduce costs and thus to keep such meager profits as might be earned. Payrolls in 1923 accounted for 41.2 per cent of the gross sales values. In 1925, in spite of the reduction in total payrolls, this was 42.7 per cent. This indicates that, however greatly costs were reduced, a still heavier shrinkage took place in the price which it was possible to obtain for the goods shipped.

There is always certain uncertainty in comparing these dollar figures with tonnage of production or shipment. Some of the companies have outside interests, such, for example, as the Steel Corporation's cement plants. It is impossible to segregate the earnings of these subsidiaries from the total of the entire corporation. However, there was little change in the characteristics of these outside activities in the two years. Hence the figures given may be regarded as fairly comparable with each other.

*United States Steel Corporation and Bethlehem, Jones & Laughlin, Youngstown Sheet & Tube Co., Wheeling Steel, Republic, Inland and Crucible Steel companies.

Earnings, Assets, Etc., of Eight Large Steel Companies

	Thousands of Dollars 1925	1923
Net earnings, after depreciation and interest	$144,930	$171,750
Surplus after dividends	59,468	85,395
Total surplus, end of year	1,187,343	1,119,644
Total assets	3,986,582	3,964,915
Plant, after depreciation	2,741,860	2,644,397
Inventories	500,630	509,686
Current assets	992,865	1,016,545
Net working capital	796,407	792,354
Operations of Eight Large Steel Companies		
Ingot production (gross tons)	32,411,000	32,846,000
Steel shipped (net tons)	23,874,000	22,988,000
Employees	400,139	411,714
	Thousands of Dollars	
Total payrolls	$731,878	$743,346
Gross Sales	1,714,000	1,804,000
Earned on common stock	104,156	128,880
	Derived Results	
Payroll per man	$1,829	$1,805
Payroll per ton shipped	30.65	32.34
Gross sales per ton shipped	71.80	78.46
Net earnings per ton shipped	6.07	7.47
Earned per share on common stock	9.58	11.85

Another Decrease in Steel Corporation's Unfilled Orders

Another decrease in the unfilled orders on the books of the United States Steel Corporation was reported as of March 31. The total unfilled orders amounted on March 31 to 4,379,935 tons, a decrease of 236,887 tons from the total of 4,616,822 tons on Feb. 28. This is the third decrease since August, last year, the first having been in January, when it amounted to 150,625 tons and the second in February, when it was 265,917 tons. Decreases previous to September occurred from March to August, inclusive. A year ago the unfilled business was 4,863,564 tons, or 483,629 tons more than at the end of March this year. The following table gives the unfilled tonnage as reported by months, beginning with January, 1924.

	1926	1925	1924
Jan. 31	4,882,739	5,037,323	4,798,429
Feb. 28	4,616,822	5,284,771	4,912,901
March 31	4,379,935	4,863,564	4,782,807
April 30	.....	4,446,568	4,208,447
May 31	.....	4,049,800	3,628,089
June 30	.....	3,710,458	3,262,505
July 31	.....	3,539,467	3,187,072
Aug. 31	.....	3,512,803	3,289,577
Sept. 30	.....	3,717,297	3,473,780
Oct. 31	.....	4,109,183	3,525,270
Nov. 30	.....	4,581,780	4,031,969
Dec. 31	.....	5,033,364	4,816,676

The high record in unfilled orders was 12,183,093 tons, at the close of April, 1917. The lowest was 2,674,757 tons, on Dec. 31, 1910.

PRESIDENT SCHILLER RETIRES

Will Be Succeeded April 19 as Head of National Tube Co. by Taylor Allderdice

William Bacon Schiller, after 50 years of active business life, more than 43 of which have been in the iron and steel industry, has decided upon a more leisurely life and accordingly on April 19 relinquishes the presidency of the National Tube Co., which he has held since August, 1902. He will be succeeded by Vice-President Allderdice.

Mr. Schiller's life has been a busy one, and began in the business world when he was a mere lad of 17 years. With only the education acquired in the ordinary schools of Youngstown, Ohio, he has risen high in the steel industry, and for that matter in the business world, entirely through a willingness to devote long hours to work and through his ability to apply the knowledge acquired in practical effort. In leaving office Mr. Schiller takes with him the esteem and respect of those with whom he has been associated in the affairs of the National Tube Co. It is repeatedly asserted that no one can point to a single act of his that was not just.

Retiring Head of National Tube Co. and His Successor

W. B. SCHILLER

TAYLOR ALLDERDICE

Mr. Schiller was born in Pittsburgh, July 8, 1859, a son of John G. and Anne J. (Queen) Schiller. His father was an iron merchant. The paternal grandfather was a native of Wurtemburg, Bavaria, coming to the United States as a very young man. The paternal grandmother came from Alsace-Lorraine, and with her near relatives settled in Philadelphia when she was a child. The grandparents located on a farm in Lawrence County, Pa., in 1845. The grandfather on the maternal side was of English origin and the grandmother came from near Londonderry, Ireland.

Mr. Schiller's first position was as an office boy with R. W. Hitchcock & Co., Youngstown, Ohio. This firm, although primarily engaged in the coal business, carried almost as many lines as the average country general store. It was Mr. Schiller's duty to open the store each morning at 7 o'clock and after working at various things during the day, he kept the books of the firm in the evening. He learned enough to take a position as bookkeeper in 1879 at the Second National Bank, Youngstown. Early in 1883 he made his first connection with the iron and steel industry, when he became bookkeeper with the Brier Hill Iron & Coal Co., Youngstown, which later became the Brier Hill Steel Co., and of which J. G. Butler, Jr., affectionately known as "Uncle Joe" Butler, then was general manager. A few months later he was promoted to secretary of the company and remained in that position until June, 1886, when he resigned to become treasurer and general manager of the Youngstown Coke Co., Ltd., and the Bessemer Limestone Co.

He came to Pittsburgh in 1899 to become general manager of the Monongahela Furnace Co., which was organized that year. This company was absorbed by the National Tube Works Co. in 1892 and besides holding the position of manager of blast furnaces Mr. Schiller directed the building of the steel works for the National Tube Works Co., upon the completion of which he was made manager of blast furnaces and the steel works. In July, 1899, when the National Tube Co. was organized, he was appointed manager of the National department, embracing all the productive capacity of the company in McKeesport. On April 1, 1900, he was transferred to Pittsburgh and appointed assistant first vice-president, one year later being elected first vice-president, succeeding Frank J. Hearne, who became president when the United States Steel Corporation acquired the company. In August, 1902, he was elected president, again succeeding Mr. Hearne, who resigned to become president of the Colorado Fuel & Iron Co.

Mr. Schiller is a director of the Union Trust Co., the Mellon National Bank, the Union Savings Bank, all of Pittsburgh, the National Union Fire Insurance Co. and the Bell Telephone Co. of Pennsylvania. He is a member of the Duquesne Club, Pittsburgh Club, Pittsburgh Golf Club, Fox Chapel Golf Club, Allegheny County Club of Pittsburgh, the Racquet and Tennis Club and India House, New York.

Taylor Allderdice, who has been named Mr. Schiller's successor as president of the National Tube Co., has been vice-president in charge of operations since 1902. A series of successions, which began in 1899, remains unbroken, as every time Mr. Schiller advanced, Mr. Allderdice moved up to take the vacated position. His elevation is a popular one, particularly within the company and especially with those who at one time or another have worked under him. Just but kindly in his treatment of those under him, with a remarkable memory for faces and names, there is a strong bond of understanding between Mr. Allderdice and the men down the line.

Mr. Allderdice also has had a long connection with the iron and steel industry. It began in 1881, when he took a minor position with the old Pittsburgh Bessemer Steel Co., Ltd., Homestead, of which his cousin, Charles L. Taylor, then was chemist and afterward general superintendent. This company later was acquired by Carnegie, Phipps & Co., Ltd., and the plant was the beginning of the present Homestead works of the Carnegie Steel Co. In January, 1883, during the panic, he left Homestead to enter Lehigh College but remained there only until the end of the term and then returned to Homestead. During the next 10 years he worked in various departments, finally becoming a roller on the 33-in. mill. In 1892 he went to take charge of the mills of the Pottsville Iron & Steel Co., Pottsville, Pa., but remained there only three months, then came back to the Pittsburgh district to take a position with the National Tube Works Co., McKeesport, Pa., to build and operate the new Bessemer steel works of the Monongahela Furnace Co., which the year before was acquired by the National Tube Works Co. He then was appointed superintendent of the steel works and rolling mills, holding this position until 1899, when he was made manager of blast furnaces and steel works, in succession to Mr. Schiller, who had been promoted to the position of manager of the National department.

Mr. Allderdice was born in Philadelphia, March 1, 1863, and was educated in the public schools there. His outside interests have been chiefly in educational channels. He was four years on the Fourteenth Ward School Board, and when the new school code went into effect in 1911, he was one of the original appointees to the Pittsburgh Board of Education, and served for about 11 years as vice-president and also as chairman of committee on buildings and supplies. He gave unstintingly of his time in the effort to bring up the standards of the public schools of the city, and recognition of his services came recently in the naming for him of a new high school in the Squirrel Hill district. He also has served as trustee of the Carnegie Institute of Technology and of the Carnegie Institute. He is a member of the Carnegie Hero Fund Commission. In 1916 Lehigh University granted him the degree of Bachelor of Science.

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Stock Market Values

AT the end of March the loans to New York brokers stood at a little over $2,500,000,000, which marked a reduction of nearly 600 million from the first of the year. This measures the liquidation of the speculative accounts of the last stage of the bull market, which liquidation reached its greatest volume toward the end of March. The process of liquidation began when the pools that had been bidding up stocks found that they could no longer find sufficient buyers. However, if they had been able to unload upon individual speculators the deflation would have come just the same, though possibly it would have been less swift.

It is almost as good as an axiom that when the price for a stock is put up 5 per cent, or even 10 per cent, in a day, it is ascribable either to short covering or to pool buying, for investment buying does not often exhibit itself in such a way. The inspiration for pool operations is manifold. There is that of pure bluff, in which hints of melons to be cut, mergers to be made, and in general the making of silk purses out of sows' ears play a prominent part. Then there is the inside pool which aims to distribute at fancy prices its holdings of a corporate stock, and generously increases the dividend to help the thing along. Next there is the pool, more legitimate in its purpose, that aims to make a broad market for a stock. Finally there is the pool that discerns that the actual earning power of some concern has been overlooked, i.e., that it has been undervalued, and shrewdly buys it early as a bargain. Pools are not, therefore, necessarily bad.

The main function of the stock market is, however, for the buying and selling of securities on the investment basis. With the purely gambling speculation now shaken out, in so far as the present is concerned, the market has settled to that basis. It may have dipped somewhat below the proper level of values, as often happens after a drastic purging. If that be so, then the quiet absorptions by investors will gradually elevate prices.

It is noteworthy that such an important investment stock as American Telephone & Telegraph suffered but little in the recent liquidation and still sells for a price that makes its dividend afford a yield of 6.2 per cent. Many of the standard railroad stocks sell for a yield of 6 per cent. It appears that 6 to 6¼ per cent is now the return that is expected from what may be considered the safe investments for a business man. The shares of the Steel Corporation and of the Consolidated Gas Co. sell on a 5.8 per cent and 5.5 per cent basis respectively, but this reflects the idea that an increase of their dividends is likely to be made. On the same hypothesis the shares of some sterling industrial companies sell for 5 per cent or lower in instances where it is known that they are piling up surpluses that some day must accrue to the benefit of the stockholders.

On the other hand, there are good companies whose shares sell for yields of 7 per cent, 8 per cent and even 9 per cent. We do not mention any of them, for anybody can figure for himself, and not only figure, but analyze their balance sheets and make a prognosis of prospects. The point is simply that the prices for the shares of all such concerns as are really sound will tend toward levels that will bring their yields into tune with the normal of the time. The one thing that would check that tendency is the fear of such a recession in business as will curtail earning powers and jeopardize existing dividend rates. The present slight recession in business does not seem to betoken that.

Without doubt the character of the stock market has changed from that of wild speculation, of indiscriminate buying by gamblers who purchase equities in shares that they hope to sell at an advance to other gamblers in the course of a few days. This is now as dead as is speculation in Florida real estate. In its new character the market is chiefly one of investment buying. It is dull for the reason that real investors are seldom in a hurry and do not make their purchases with any blare of trumpets. The immediate future of the stock market depends upon the diagnosis of our general business position. As to the latter our opinion was expressed in last week's issue. One cloud gathering is the prospective checking of building operations as a consequence of the

recent increase in the wages of building mechanics in the New York territory, which is inspiring those in other centers to make similar demands.

Record-Breaking Steel Production

MARCH furnished a new high spring tide in steel ingots, with 4,491,689 gross tons. This exceeded the next highest month's total by more than 275,000 tons, or 6½ per cent; that record was made in May, 1923. Not only did March make a new record, but it furnished the terminal month for eight other records—those for two months, three, four, five, six, seven, eight and nine months.

During the twelve months ended March 31 the ingot tonnage, according to the unrevised figures of the American Iron and Steel Institute, aggregated 44,483,478. This is within a fraction of 1 per cent of the previous high record—44,513,413 tons, made in the twelve months ended Feb. 28, 1919. Both figures are well above the total for last year, which is estimated by the institute at 44,186,977 tons.

Production for the first quarter of 1926, at 12,449,828 tons, makes a new high record and incidentally represents a larger tonnage of steel than was made in any entire calendar year previous to the beginning of this century. The highest previous quarter was the first quarter of 1925, with 12,153,327 tons.

High outputs in March have long been the aim of steel works operators. Even though there be some accumulation of semi-finished steel, the economy of full production is often more than an offset. Last year there was a considerable overproduction of steel in the first quarter, resulting in curtailment of operations in the second quarter. Some recession from the higher March pace of this year is to be expected, as has been indicated in the past few weeks, but up to this time the common indices of consumption have pointed to a closer relation between production and consumption than existed in the corresponding period of 1925.

Our Prosperity in British Eyes

IT was not to be expected that the British trade union delegates who came to the United States a few weeks ago to study production methods would make any real discoveries. When they landed in New York it was announced that their mission was to find out, if possible, why American manufacturers were able to undersell their British competitors in various world markets though paying far higher wages than the average in Great Britain.

Returning to New York a few days ago from their tour of the country the visitors told the newspapers some obvious things, which were at the same time inconclusive. Their leader did not find enlightenment in the answer the President gave—that American workers earn high wages because they work. His comment was that British wage-earners also know how to work. His one generalization on the high wages here was that they were due to "high production and high consumption."

Another delegate said that the organization of industry in the United States was responsible for high wages, but did not make it clear whether he referred to employer-employee relations or to organization on the management side. A third found that American standardization made high wages possible, contrasting the diversity of British products, nearly 50 per cent being made for export and meeting a great range of requirements.

The familiar complaint of British manufacturers that trade union limitations have hobbled them in the international race does not figure in the newspaper interview, but there is some comment on the harmony existing between management and men in so many industries here and on the good results of the increasing investments American workmen are making in the stocks of industrial corporations.

Nothing came of an attempt to draw out the visitors on what they had seen of prohibition and its effect on industry and the worker's scale of living. THE IRON AGE is able to say, however, that a leader in the steel industry gave very positive testimony on this point when interviewed by members of the delegation. To the question whether an increase in the efficiency of steel workers had been observed since the war his answer was yes. Asked to what he attributed this increase, he replied that in his opinion it was largely due to prohibition.

While these trade unionists were touring the United States, a book on "The Secret of High Wages" appeared in London, written by two young Britons who traveled over this country last year. Their analysis of the situation here is summed up in these nine reasons for American prosperity, though others equally valid might have been given:

> One—Promotion in America is by merit.
>
> Two—America sticks to the principle of small profits and quick returns, and wealth is made by fine margins of profit on immense and rapid turnover.
>
> Three—Rapid turnover is secured by simplification and cheapening of processes which necessitates less capital for a given output.
>
> Four—America shows endless keenness in devising time-saving and trouble-saving appliances.
>
> Five—The American employer is not hostile to high wages.
>
> Six—American manufacturers cooperate by exchanging ideas.
>
> Seven—Americans are vigilant and acute in eliminating waste and in conserving time, energy and space.
>
> Eight—American welfare methods double high wages in their stimulative effect by surrounding the workers with cleanliness and light and by seeking in every way to increase their conveniences and satisfaction.
>
> Nine—Americans encourage research with magnificent intelligence, scouring the world to obtain the best research brains.

The British engineer whose anonymous book "American Competition," stirred British industry to its depths thirty years ago, said plainly that manufacturers there must set their houses in order. In like manner the co-authors of "The Secret of High Wages" say plainly:

> The very life of this country depends on two things—deliberate adoption by the employers of a policy of high wages, and intelligent understanding

on the part of the men that every mechanical aid to efficiency must be used to the utmost.

The organization of cheaper production on American lines must be accepted and restrictions on individual output must be swept away.

Meanwhile the continuance of the coal subsidy and the permanent loading of industry with the burden of unemployment doles are the chief contentions of British labor. How to add to the wealth of the nation by increasing and cheapening production is seemingly of far less concern than ways and means of transferring existing wealth from one set of hands to another.

Little Steel for Freight Cars

FOR a correct appraisal at any time of the condition of the steel trade and its prospects it is important to have information on the relative weight of different classes of steel consumption. In past years there have been great changes and there are undoubtedly new trends at the present time.

The use of old methods of measuring may lead one far astray. There was a time, for instance, when rail orders were a very good indication of business prospects, and when rails themselves furnished the most important single outlet for steel. It is not so now. Rail buying is one of the steadiest factors, year by year, but the rail tonnage is small relative to the steel total.

Then there is the steel used in the building of freight cars. At one time this was thought of as an important point in the steel trade, but now is a much smaller tonnage item than formerly. The American Railway Association reports of freight cars installed and retired in the last three months covered are shown in the accompanying table.

Incidentally, the retirements shown exceeded the replacements by 7450 cars. The total number in service Dec. 1 was 2,353,501, while on March 1, it was 2,345,508, a decrease of 7993. The discrepancy is presumably due to changes in classification of individual roads. The installations were of larger individual capacity than the retirements, making up practically for the loss of number, the aggregate carrying capacity of all cars being 210,542,536,886 lb. Dec. 1 and 210,362,182,000 lb. March 1, a decrease of less than one-tenth of 1 per cent.

Freight Cars Installed and Retired, Jan.-March

	Installed	Retired
December	4,386	10,612
January	4,607	7,396
February	7,665	6,100
Total	16,658	24,108

If a much longer average interval than two months elapsed from the time the steel ingot is produced to the time the freight car is delivered it would be strange, and a comparison between the car deliveries shown above and the steel ingot production of the last three months of last year is in point. The daily rate of ingot production in those three months was approximately 151,000 tons. That was a very high rate.

Yet to set against that unusually high rate of steel mill operation we have freight car deliveries at the rate of 5500 a month. Of course, some cars are made that do not enter the American Railway Association statistics cited, but their number is not large.

As to the proportion of steel involved in these freight cars: The ingot production in the last three months of 1925 was 11,776,289 gross tons. The rolled steel involved in the cars was hardly as much as 300,000 gross tons. Allowing for scrap losses in the mill, the proportion of the ingots was scarcely more than 3 per cent, and allowing for freight cars outside the statistics here used the proportion would not be 5 per cent. Here is a case where the steel industry was very active with very little help from freight cars.

May Build Cast Pipe Plant

Alan Wood Iron & Steel Co. Considering Project —Would Adjoin Blast Furnaces at Swedeland, Pa.

The Alan Wood Iron & Steel Co., Philadelphia, is considering the building of a plant adjoining its blast furnaces at Swedeland, Pa., for the manufacture of cast iron gas and water pipe and ultimately heavy castings. This move, if finally decided upon, will be undertaken to afford a steady outlet for the excess pig iron produced at Swedeland, which excess now finds its way into the merchant market. The contemplated plant is to have an initial capacity of 250 tons a day, but the plans are such that facilities may be readily increased to use up to 1000 tons a day if necessary.

Consideration of the cast iron pipe plant was brought about by the situation at Philadelphia and elsewhere along the Atlantic seaboard with respect to importations of foreign iron. This situation, as has repeatedly been pointed out, has forced the shutting down of some of the Eastern furnaces, while others have at times had to sell without profit to meet foreign competition.

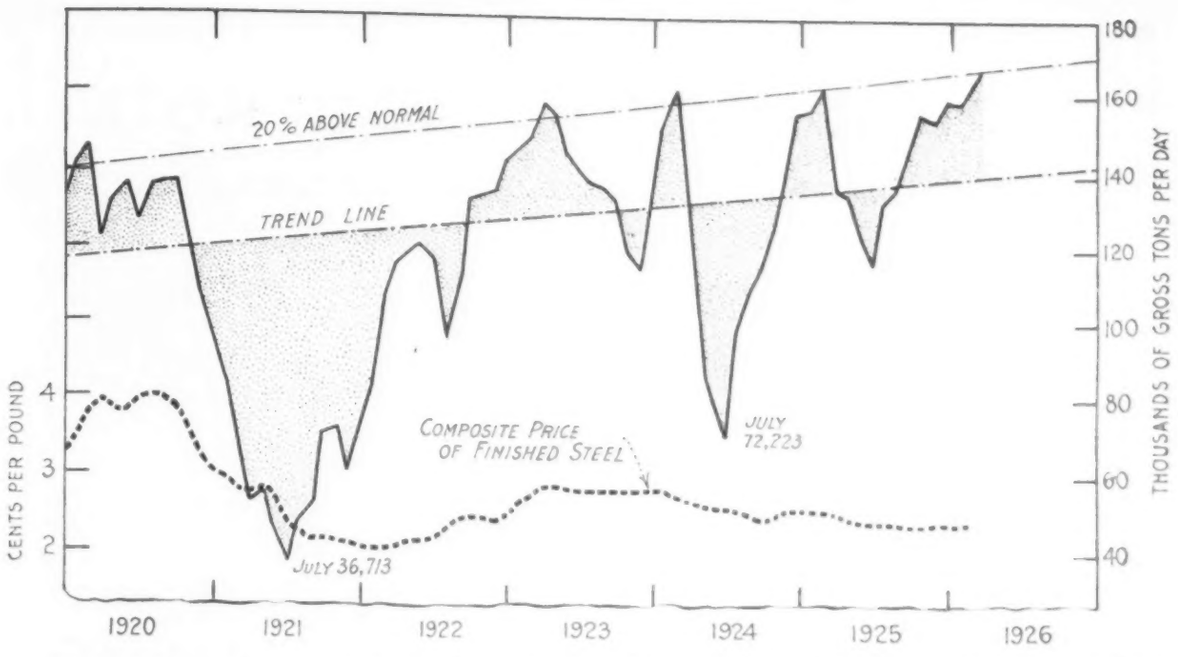
The annual capacity of the three blast furnaces of the Alan Wood Iron & Steel Co. is about 450,000 tons a year, but not much over two-thirds of this amount was made last year, because during most of the year only two furnaces were in blast, and such is the operation at present. Nearly 40 per cent of the company's output of pig iron last year was sold in the merchant market, the remainder being used in its own steel plant.

British Iron and Steel in March

LONDON, ENGLAND, April 13 (*By Cable*).—The production of pig iron in Great Britain in March was 568,500 gross tons and that of steel ingots and castings was 784,100 tons. This compares with 502,000 tons of pig iron and 703,800 tons of steel in February. The monthly average so far this year is 534,700 tons for pig iron, comparing with 519,700 tons per month in 1925, and 709,400 tons for steel, comparing with 616,400 tons per month in 1925.

British Empire Mills on 75 Per Cent Basis

TORONTO, ONT., April 10.—Semi-official information regarding operations of the Sydney, N. S., plant of the British Empire Steel Corporation, indicate general improvement in business. At the present moment the Sydney mills are operating at about 75 per cent of capacity, with enough orders on the books to keep them going at this rate until June 1. Reports of a contemplated shutdown and of a 15 per cent cut in wages are denied. Two things, however, are required to put the Sydney steel industry on a secure basis: More rail business from the two big Canadian roads, and more adequate tariff protection against foreign competition.



March Production of Steel Ingots Shows That the Daily Output Was About 20 Per Cent Above Normal, the Normal Representing Consumption of a Balancing of Excesses and Deficiencies of Production Over a Period of Years

March Steel Ingot Output a Record

Daily Rate 7834 Tons or 4.9 Per Cent Larger Than February—Largest Month and Daily Rate Ever Reached

A NEW record for all time in steel ingot output was made in March. At 166,359 gross tons per day, the March production was 7834 tons per day larger than the February rate, an increase of 4.9 per cent. In February there was a decrease from the January rate of less than 1 per cent with an increase in January over December of about 4.5 per cent.

It was in March, 1924, that the next largest daily rate to that of last month was recorded—161,796 tons. The nearest approach to the 4,491,689 tons produced last month was in May, 1923, when 4,216,355 tons was made. In daily rate, March record this year was 4877 tons in excess of that of March a year ago and the total this year was 293,169 tons in excess of that of March, 1925.

The statistics of the American Iron and Steel Institute show that the March production of the companies which made 94.43 per cent of the country's total in 1924 was 4,241,502 tons. Assuming that the 5.57 per cent not reporting produced at the same rate, a total March output is indicated of 4,491,689 tons, from which the daily rate was calculated.

The table gives the production by months of the different kinds of steel, together with the estimated daily rate for all companies.

Monthly Production of Steel Ingots Reported by Companies Which Made 94.43 per cent of the Steel Ingot Production in 1924

(Gross Tons)

Months 1926	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies
Jan. ..	3,326,846	581,683	13,664	4,153,545	159,752
Feb. ..	3,023,829*	556,031	12,818	3,804,594*	158,525*
March.	3,590,791	635,680	15,031	4,491,689	166,359
3 Mos.	9,941,466	1,773,394	41,513	12,449,828	161,686
*Revised					
1925					
Jan. ..	3,262,748	689,996	11,960	4,198,564	155,502
Feb. ..	2,931,964	602,042	13,014	3,756,243	156,510
March .	3,336,169	614,860	13,633	4,198,520	161,482
3 Mos.	9,530,881	1,906,898	38,607	12,153,327	157,835
April .	2,857,802	515,715	14,182	3,587,524	137,982
May ..	2,754,130	497,708	13,790	3,458,253	133,010
June ..	2,538,988	476,945	12,490	3,207,056	123,348
July ..	2,444,969	457,095	13,547	3,087,590	118,753
Aug. ..	2,696,667	523,734	12,914	3,424,034	131,694
Sept. .	2,737,251	547,121	13,977	3,492,904	134,342
Oct. ...	3,075,995	584,567	15,624	3,893,028	144,186
Nov. ..	3,091,361	581,347	17,085	3,907,437	156,297
Dec. ..	3,169,224	569,304	15,843	3,975,824	152,916
Total .	34,897,268	6,660,434	168,059	44,186,977	142,080

Open-Hearth Production Records Broken in March

A new high ingot production was established by the United Alloy Steel Corporation, Canton, Ohio, during March, according to George H. Charls, president, greater tonnage being produced on the 14 furnaces than had formerly been produced when 22 furnaces were in operation. Orders booked, sales and shipments for the first quarter of 1926 ran in excess of the same period last year.

The United Alloy company is producing rustless, heat-resisting irons. Enduro, which is a high-chromium, low-carbon alloy iron, first originated in Europe, but was improved upon and put into quantity production in the United States. It has splendid possibilities for articles in which corrosion is a problem to overcome. In many places it is supplanting copper, brass, nickel and aluminum, because of its greater strength and non-tarnishing qualities.

A new lever operated master switch for steel mill service or other work where exceptional strength and durability are important factors is announced by the General Electric Co. The new switch, the C-3003, is made in several forms.

Iron and Steel Markets

Some Slackening in Steel Demand

After a Record Month Production Has Receded Slightly—Automobile Consumption Somewhat Less—Sheet Prices Easier—Heavier Pig Iron Imports

NEW orders for finished steel have slackened in the past week and there is some recession from the high rate of production maintained throughout March.

As against an operation up to full ingot capacity for more than half of last month, the Steel Corporation's rate is now put at somewhat above 95 per cent. In the Pittsburgh and Youngstown districts the average for all producers is slightly under 80 per cent, as against 85 per cent in the latter part of March.

The Steel Corporation's unfilled orders on March 31 and the unprecedented output of steel ingots last month, as reported in the week, both confirmed what has been said lately of the country's high rate of steel consumption.

At 12,450,000 tons, the country's steel production in the first quarter of the year was 300,000 tons more than in the like period of 1925. But a year ago there were evidences that consumers' stocks had grown under the heavy shipments of the first three months, whereas today the meagerness of such stocks is a matter of comment.

The falling off of but 236,000 tons in Steel Corporation orders last month in the face of so great an output was favorably construed. There were heavy rollings of rails in March, and new tonnages to take their place will not come until fall, but on the other hand in the final month of each quarter there are fresh tonnages of sheet bars and a new quota is entered up on such contracts as that of the American Can Co. for tin plate.

Shipments of steel to railroads and the building trades are holding up, but the automobile industry is taking less. Automobile parts makers are slowing down in view of an apparent overproduction at such plants in the past three months.

Automobile body sheets, which have been holding their position while other sheets have weakened, have declined $2 a ton in the past week on sales at Detroit. Generally sheet prices show irregularity, more business in blue annealed being done at 2.40c. than at 2.50c.

Can makers are taking out tin plate at the full rate of their contracts, but are not exercising options on additional amounts, in view of the late spring.

The weather has not aided construction work and merchant pipe is only moderately active. Oil field work shows more promise, and one pipe line inquiry—288 miles of 8-in. pipe for Illinois—represents 20,000 tons. A proposed gas line from Amarillo, Tex., to Denver, 450 miles, will require 16-in. and larger pipe.

On two or three attractive contracts the common price for reinforcing bars has been shaded.

The Pennsylvania Railroad has bought 2000 automobile cars and 234 items of passenger equipment and the Burlington bought 500 all-steel hopper cars. Two large systems have taken the additional rails on which their contracts gave them options and in the past week new bookings of 10,000 tons have gone to the Ensley and Chicago mills.

The break of $1.50 in the Pittsburgh pig iron market and the reduction of $1 that followed at Chicago and Cleveland have had a mixed effect. At Pittsburgh a large sanitary foundry interest added 7000 tons to its original purchase. Foundries tributary to Cleveland have taken 20,000 tons at the new prices. Other consumers in the Central West are holding off in the hope of lower terms. At Chicago, buyers who have been hesitating are now inquiring for May and June iron.

Chicago reports that the average of foundry operations in that and tributary districts is less than in February and March.

Heavy melting scrap is weaker in the eastern Pennsylvania market. At Pittsburgh, however, two considerable inquiries have appeared after several weeks of dullness, but an offer of $16.50, as against a nominal price of $17, has been rejected by dealers.

A cast iron pipe company has bought 12,000 tons of foreign iron for its Birmingham plant and about 8000 tons for Burlington, N. J., the latter delivery being made at $19.50, duty paid. The continued firmness of the Birmingham pig iron market influenced the purchase abroad for that plant, although the amount saved by buying foreign iron was not important.

On the eve of a Washington hearing on the pig iron tariff, an increase in which is advocated by Eastern pig iron producers, imports took a jump at Philadelphia last week, 12,645 tons arriving, of which England shipped nearly 7000 tons and Germany 3500 tons.

Including 5100 tons for Holyoke, Mass., and 3500 tons for Norwalk, Conn., French works have just taken municipal contracts covering 9300 tons of cast iron pipe.

THE IRON AGE composite price for pig iron has dropped to $20.46 per gross ton, or 92c. in two weeks. The composite price for steel remains at 2.439c. per lb. for the third successive week.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Apr. 13, 1926	Apr. 6, 1926	Mar. 16, 1926	Apr. 14, 1925
No. 2X, Philadelphia‡	$23.26	$23.26	$23.26	$23.26
No. 2, Valley furnace†	19.00	19.00	20.50	20.00
No. 2, Southern, Cin'ti†	25.69	25.69	25.69	24.05
No. 2, Birmingham, Ala.†	22.00	22.00	22.00	20.00
No. 2 foundry, Chicago*	22.00	22.00	23.00	23.00
Basic, del'd, eastern Pa.	21.75	21.75	22.25	22.75
Basic, Valley furnace	*18.50*	19.00	20.00	20.00
Valley Bessemer del'd P'gh	*21.26*	21.76	22.76	22.76
Malleable, Chicago*	22.00	22.00	23.00	23.00
Malleable, Valley	19.00	19.00	20.50	20.50
Gray forge, Pittsburgh	20.26	20.26	21.76	21.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	88.00	88.00	95.00	115.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	34.00	34.00	35.00	40.32
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.50
O.-h. billets, Pittsburgh	35.00	35.00	35.00	35.50
O.-h. sheet bars, P'gh	36.00	36.00	36.00	37.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.50
O.-h. billets, Phila	40.30	40.30	40.30	41.67
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.28
Iron bars, Chicago	2.00	2.00	2.00	2.10
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.20
Steel bars, New York	2.34	2.34	2.34	2.44
Tank plates, Pittsburgh	1.90	1.90	1.85	2.00
Tank plates, Chicago	2.10	2.10	2.10	2.30
Tank plates, New York	2.24	2.24	2.14	2.34
Beams, Pittsburgh	1.90	1.90	1.90	2.10
Beams, Chicago	2.10	2.10	2.10	2.30
Beams, New York	2.24	2.24	2.24	2.34
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Apr. 13, 1926	Apr. 6, 1926	Mar. 16, 1926	Apr. 14, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.25	3.25	3.25	3.40
Sheets, black, No. 28, Chicago dist. mill	3.45	3.45	3.45	3.60
Sheets, galv., No. 28, P'gh	4.50	4.50	4.50	4.50
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.70	4.70	4.70
Sheets, blue, 9 & 10, P'gh	*2.40*	2.50	2.50	2.60
Sheets, blue, 9 & 10, Chicago dist. mill	2.60	2.60	2.60	2.70
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.95
Plain wire, Pittsburgh	2.50	2.50	2.50	2.60
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.70
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.55
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.65
Tin plate, 100-lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$16.50	$16.50	$17.00	$16.00
Carwheels, Philadelphia	17.50	17.50	17.50	18.00
Heavy steel scrap, P'gh	17.00	17.00	17.50	17.00
Heavy steel scrap, Phila.	*16.00*	16.50	16.00	14.50
Heavy steel scrap, Ch'go	*13.50*	13.75	14.00	14.75
No. 1 cast, Pittsburgh	16.50	16.50	17.00	18.00
No. 1 cast, Philadelphia	17.50	17.50	17.50	17.50
No. 1 cast, Ch'go (net ton)	**16.50**	16.25	17.00	17.50
No. 1 RR. wrot, Phila.	17.50	17.50	17.00	18.00
No. 1 RR. wrot, Ch'go (net)	12.75	12.75	13.00	13.00
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$3.00	$3.00	$3.00
Foundry coke, prompt	*4.00*	4.25	4.50	4.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	*14.00*	14.12½	14.25	13.75
Electrolytic copper, refinery	*13.62½*	13.75	13.95	13.37½
Zinc, St. Louis	*7.15*	7.20	7.35	7.12½
Zinc, New York	*7.50*	7.55	7.70	7.47½
Lead, St. Louis	*7.65*	8.00	8.00	7.70
Lead, New York	*8.00*	8.25	8.20	8.05
Tin (Straits), New York	63.75	63.75	66.00	50.00
Antimony (Asiatic), N. Y.	*17.25*	18.00	17.00	13.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Steel Output Recedes in a Quieter Market —Heavy Melting Scrap Stronger

PITTSBURGH, April 13.—The steel market is quieter, and while production in the Pittsburgh district has not yet shown much loss, there has been a substantial recession in the activities of the Youngstown district, where only the Steel Corporation plants are maintaining the recent rate of ingot output. Based on the number of units engaged this week in Youngstown, ingot production in that district is not over 75 per cent, as compared with the recent average of about 85 per cent, with only about two-thirds of the independent open-hearth furnaces active. Pittsburgh, Wheeling and Johnstown operations are holding up rather well, and the general average of the four districts is slightly under 80 per cent of ingot capacity, as against 85 per cent, the late March average.

Sales effort naturally is becoming more intensive, because buying is at extremely close range and the matter of rolling schedules is growing in importance. Many classes of finishing capacity start Sunday night with business sufficient only to keep them going until Thursday or Friday. The remarkable feature of the situation is, however, that despite the need of orders there is little shading of prices. It is so difficult to get 2.10c., base Pittsburgh, for small lots of steel bars that only where the order calls for a number of sizes is that price insisted on at all earnestly. In a general way, 2c. is the ruling price, and the very large buyers are understood to be covered on second quarter contracts at 1.90c.

Pressure for orders for black sheets has brought out a price as low as 3.15c., base Pittsburgh, and on cold-rolled strips at least one large producer is making a quotation of 3.75c., base, or $3 a ton below the common quotation.

The recent slump in foundry pig iron brought out a fair amount of additional business, although it is believed practically as much would have come out at sustained prices as there has been no real broadening of interest in the market on the part of consumers. A further recession of 50c. a ton is noted in the steel-making grades, but it amounts to nothing more than an adjustment of prices to the recent relation with foundry iron.

The appearance in the scrap market of two steel companies for round tonnages of heavy melting steel seems to have checked the downward tendency of prices. Coke is holding at about recent levels but there is no shortage, and the coal market still is very much a buyers' affair.

Pig Iron.—The Standard Sanitary Mfg. Co. since a week ago has made additional purchases of foundry iron totaling about 7000 tons, paying $19, Valley furnace, for No. 2 grade. Possibly a like tonnage has been sold to other consumers. With last week's purchases this would make a total of approximately 20,000 tons that has been placed since the crash in prices. There is still a spirit of conservatism among some of the large users of foundry iron, but efforts to break the price have not been successful. Outside of one lot of 500 tons of resale Bessemer iron that was sold at $19.50, Valley furnace, and a few carloads which brought $20, there has been no activity in the steel-making grades. It is now apparent, however, that $19 for basic and $20 for Bessemer no longer can be readily

done, and these grades are more properly quotable at the former differential of 50c. per ton below and 50c. per ton above foundry iron respectively. The Bethlehem Steel Co. has put on another furnace at Johnstown, Pa., and now has 9 of the 10 furnaces at that plant in production.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.50
Bessemer	$19.50 to 20.00
Gray forge	18.50
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	$19.00 to 19.50
Low phosphorus, copper free	27.50 to 28.00

Ferroalloys.—Recent quotations on ferromanganese are holding but they do not mean much, as there are few consumers who failed to cover their requirements for the remainder of this year during the recent scramble for business at competitive prices, and current demands are very few and very small. New business in the other ferroalloys is light, although there is one fair-sized inquiry for spiegeleisen from a local steel company that hitherto has not used much of that material. Specifications on contracts are steady. High grade spiegeleisen is still scarce. Prices are given on page 1091.

Semi-Finished Steel.—Recent prices are holding, but they are becoming nominal, as there is almost no open market activity and specifications against second quarter contracts are light because enough first quarter tonnage was carried over into this quarter to carry most buyers through this month. If there were inquiries, the first quarter prices on billets, slabs and sheet bars would be quoted. Buyers are not sufficiently interested in fresh supplies to test the market. The recent abandonment of the size extra on wire rods does not mean much, since there was comparatively little business in the sizes that commanded the extra price. Prices are given on page 1091.

Wire Products.—Producers in this district are finding business quieter than it was during the latter part of March, but find comfort in the fact that shipments are large, both in comparison with last month and April last year. Improved weather conditions are counted on to reduce jobbers' stocks and bring on fresh demands. There is not much incentive for heavy forward buying, because there is no sign of higher prices and the ability of the mills to meet all demands promptly also encourages distributers to confine takings closely to their immediate requirements. Prices are steady. They are given on page 1091.

Rails and Track Supplies.—Makers of standard-section rails still have fairly large order books, but the greater part of 1926 requirements has been rolled and shipped. The market is very dull in light rails, as more coal mines are suspending than starting and the chief outlet for light sections is to the coal mines. Competition is sharp for such business as is offered and $34 per gross ton is the common price for billet rails. The railroads are not specifying freely or showing much interest in new supplies of spikes and other track supplies. Small spikes are rather easily obtainable at $2.90, base per 100 lb. Other prices are given on page 1089.

Tubular Goods.—Estimates of steel pipe mill operations range all the way from 70 to 80 per cent of capacity. There is a steady demand for standard pipe, but if anything, it is under rather than above that at this time last year. The backward spring is believed to have held back much construction and consequently the demand for standard pipe. The mills are getting fairly good orders for oil country pipe, and with some line pipe business coming out from time to time, engagement of lap weld furnace capacity is high in relation to the butt weld furnaces. The Roxana Petroleum Co. is inquiring for approximately 300 miles of 8-in. pipe, or about 20,000 tons, for a line to be laid in Illinois. Demand for boiler tubes is below the capacity of makers to supply, and steadiness in prices which recently developed is based chiefly on a realization that cut prices do not create business. A gas line to run from Amarillo, Tex., to Denver, Colo., is mentioned as a likely project. This line would be 450 miles and would require pipe 16-in. and larger in diameter. Discounts are given on page 1089.

Sheets.—Production and shipments of sheets are still high in relation to new demands, suggesting that consumption is sustained but evidently it is not having the usual spring increase. As measured by orders and specifications, new business has been rather light with Pittsburgh and Youngstown district mills. The automobile industry is now engaged in correcting some excess of production over sales, which have been affected by adverse weather conditions, and is less insistent for supplies. Spring demands for the common finishes seem to wait on better weather. Prices are not quite so well maintained as recently, but there is no repetition of the tendency of a year ago to figure that at some price there is a demand. On the contrary, the effort is to fit production to the demand. Prices are given on page 1089.

Tin Plate.—Container manufacturers are taking out tin plate to the full extent of original contracts, but options to take additional amounts are not being generally exercised and a tight summer supply situation is not regarded likely. The late spring has probably led to some modification of packing crop expectations and consequently on packers' can requirements. Production of tin plate is still high, with almost full physical operation of mills in this and nearby districts.

Cold-Finished Steel Bars and Shafting.—Screw stock is not moving with quite as much freedom as recently. The principal outlet is to automobile parts makers, and they are ordering more cautiously. Shafting is moving steadily. Prices are well maintained at 2.50c., base Pittsburgh, for ordinary tonnages.

Hot-Rolled Flats.—Sales of bands are occasionally noted at 2.40c., base Pittsburgh, but in other directions recent prices are firmly maintained. Orders on local makers are well up to the rate of the same period last month, but are not keeping pace with shipments, with the result that backlogs are gradually melting. Prices are given on page 1089.

THE IRON AGE Composite Prices

Finished Steel

April 13, 1926, 2.439c. Per Lb.

One week ago	2.439c.
One month ago	2.431c.
One year ago	2.531c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.424c.,	Feb. 9
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

April 13, 1926, $20.46 Per Gross Ton

One week ago	$20.71
One month ago	21.38
One year ago	21.04
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$20.46,	April 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c. to 2.44c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.25c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.00c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.12c. to 2.22c.
Del'd New York	2.24c. to 2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.50c.
Bars, f.o.b. Chicago	2.50c.
Bars, Cleveland	2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.75c. to 3.90c.
Strips, f.o.b. Cleveland mills	3.75c. to 3.90c.
Strips, delivered Chicago	4.20c.
Strips, f.o.b. Worcester mills	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1 in.	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregong. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.40c. to 2.50c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills	2.60c.
Nos. 9 and 10, del'd Phila'phia	2.82c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Ch'go dist. mill	3.45c.
No. 28, del'd Phila'phia	3.67c.

Galvanized

No. 28, f.o.b. Pittsburgh	4.50c. to 4.60c.
No. 28, f.o.b. Chicago dist. mill	4.70c.
No. 28, del'd Philadelphia	4.92c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Chicago dist. mill	3.45c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh	4.30c. to 4.40c.

Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.85c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)
(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(1½% Nickel, 0.10% to 0.20% Carbon)	$3.20 to $3.25
2300	(3½% Nickel)	4.50 to 4.60
2500	(5% Nickel)	5.70 to 5.80
3100	(Nickel Chromium)	3.50 to 3.60
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.00 to 7.25
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.50
5200*	(Chromium Steel)	7.00 to 7.50
6100	(Chrom. Vanadium bars)	4.20 to 4.30
6100	(Chrom. Vanad. spring steel)	3.80
9250	(Silicon Manganese spring steel)	3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.45 to 4.55
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
	Chromium Molybdenum spring steel (1 — 1.25 Chrom., 0.30 — 0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	$34.00 to 35.00
Light (from rail steel), f.o.b. mill	33.00 to 34.00
Light (from billets), f.o.b. Ch'go mill	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.10
Spikes, ½ in. and smaller	2.90 to 3.50
Spikes, boat and barge	3.25
Track bolts, all sizes	4.00 to 4.50
Tie plates, steel	2.25 to 2.35
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	12
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	⅛ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	12
¾	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	18
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	48
1¼ to 1½ in.	52	3½ to 3½ in.	47
1⅝ in.	36	4 in.	50
2 to 2¼ in.	31	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

Cold-Rolled Strips.—Recession in automobile production, though not general, has been sufficient to bring about a quieter market in this product, and orders and specifications so far this month have run slightly behind the same period in March. Most makers are still quoting 3.90c., base Pittsburgh or Cleveland, and claim to be getting that price, but at least two makers have a price of 3.75c. and that quotation is appearing in a number of widely separated consuming points.

Steel and Iron Bars.—Mills, as a rule, are experiencing considerable difficulty in getting more than 2c., Pittsburgh, for the general run of ordinary tonnages. When an order is small and calls for a wide variety of sizes as high as 2.10c. is possible. Practically all makers are able to make very quick delivery against new business, and the desire to maintain schedules possibly accounts for the virtual disappearance of prices above 2c., base. Large buyers who cover by quarters generally had a price of 1.90c. for this quarter. Iron bars are not moving with much snap, and the current quotation refers principally to small tonnages. Prices are given on page 1089.

Structural Steel.—There are no suggestions that less than 1.90c., base Pittsburgh, can be done on large structural shapes, and on small tonnages for early delivery the mills are able to get 2c. Structural shops in this district are getting a fair amount of business, and a number of small jobs have reached the pending stage.

Plates.—There is rigid adherence to 1.90c., base Pittsburgh, for plates on the part of all makers of this and nearby districts. Eastern mills are holding firmly to that price, and the situation also is helped by the fact that a very fair amount of line pipe business is coming out and some rather good-sized tonnages are embraced in two big lines projected for the Central and Far West. Recent river barge awards call for about 2500 tons of steel, mostly plates.

Bolts, Nuts and Rivets.—Business in bolts and nuts is being maintained at the March rate, which was the highest attained in more than two years and resulted in an average operation for makers throughout the country of more than 72 per cent of capacity. Prices still are very firm. Rivet business is good, but there continues to be variation in prices, particularly in large rivets, on which a few makers still are going as low as $2.40, base, per 100 lb. on desirable orders. Prices and discounts are given on page 1091.

Coke and Coal.—Coke prices are holding fairly steady at the levels of the past few weeks. Larger producers seem to have no furnace coke beyond their contract obligations and have been obliged to buy some spot coke to fill orders. As much as $3.25 per net ton at ovens has been paid for coke of established reputation, but the ruling price still is $3, at which good, but not well-known brands, are obtainable. Medium-sulphur 48-hr. coke, suitable for smelting non-ferrous ores, is available at $2.50. Foundry coke is quotable at from $4 to $4.50 for good brands, while specially prepared brands range from $5 to $5.50. Slack coal is scarce because there is not much sizing of coal at present and prices are firm, but for run-of-mine coal of all grades the market is as dull and weak as it has been at any time recently. Prices are given on page 1091.

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 28 gage)	4.35c.
Galvanized sheets (No. 28 gage)	5.60c.
Blue annealed sheets (No. 10 gage)	3.50c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails	3.05

Old Material.—Two down-river steel companies have appeared in the market for round tonnages of heavy melting steel this week. One with an offer of $16.50 and the other, which has rather exacting specifications, with an offer of $17. Dealers have turned down both bids, because the tonnages would mean going short on the market and the prices offered do not look at all attractive for such a transaction. Dealers want $17.50 for delivery to the plants of either of the companies seeking tonnages. These inquiries have rather changed the complexion of the market, which until yesterday was extremely dull and inclined toward weakness. On the basis of the bids, heavy melting steel does not appear to be quotable at less than $17, and that price seems likely to be paid within the next few days by one of the companies in the market. The Norfolk & Western Railway is offering 6663 gross tons of scrap in a list closes at noon, April 14.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	$17.00
No. 1 cast, cupola size	$16.50 to 17.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.00 to 18.50
Compressed sheet steel	15.50 to 16.00
Bundled sheets, sides and ends	14.50 to 15.00
Railroad knuckles and couplers	18.50 to 19.00
Railroad coil and leaf springs	18.50 to 19.00
Low phosphorus blooms and billet ends	21.00 to 21.50
Low phosphorus plates and other material	19.00 to 19.50
Low phosphorus punchings	19.00 to 19.50
Steel car axles	22.00 to 22.50
Cast iron wheels	17.00 to 17.50
Rolled steel wheels	18.50 to 19.00
Machine shop turnings	12.00 to 12.50
Short shoveling turnings	12.50 to 13.00
Sheet bar crops	18.50 to 19.00
Heavy steel axle turnings	15.00 to 15.50
Short mixed borings and turnings	12.50 to 13.00
Heavy breakable cast	15.00 to 15.50
Cast iron borings	12.50 to 13.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	17.00
Malleable scrap	17.00 to 17.50

Mileage Scale Rates Become Effective in Chicago District, April 25

New rates on finished steel from Chicago district mills to points in Illinois and Southern Wisconsin are scheduled to go into effect April 25, according to an order recently issued by the Interstate Commerce Commission. The new rates are based on the so-called Jones & Laughlin mileage scale and in most cases are higher than those now in effect. A comparison of the present and new rates to some of the cities affected is given in the appended tables.

Rates on Finished Steel from Chicago District Mills

Plates, Shapes, Bars, Sheets, Tin Plate, Pipe, Rivets

Per 100 Lb.

Destination	Present Rate	Rate Effective April 25
St. Louis	$0.175	$0.22
Peoria, Ill.	0.13*	0.165
Davenport, Iowa Moline, Ill. Rock Island, Ill.	0.155†	0.17
Milwaukee, Wis.	0.08	0.095

*Rate on angles, bars, channels, plates, rivets, sheets, tin plate. Rate on beams, tees, zees and steel pipe is 15½c.

†Rate on angles, bars, channels, plates, rivets, sheets, tin plate. Rate on beams, tees, zees and steel pipe is 17½c.

Rates on Wire and Wire Products from Western Mills

Per 100 Lb.

	Joliet and Waukegan, Ill.		DeKalb, Ill.	
Destination	Present Rate	Rate Effective April 25	Present Rate	Rate Effective April 25
St. Louis	$0.215	$0.22	$0.215	$0.22
Peoria, Ill.	0.175	0.165	0.155	0.17
Davenport, Iowa Moline, Ill. Rock Island, Ill.	0.215	0.17	0.175	0.16
Milwaukee, Wis.	0.08	0.095	0.115	0.12
Madison, Wis.	0.115	0.14	0.115	0.15

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over	$35.00
Rolling, 2-in. and smaller	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
6 in. x 2 in. and smaller	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base	$45.00
Screw stock	$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	$12.00 to $13.00
	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.00 to $23.00
	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	55c. to 60c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$3.00 to $3.25
Foundry, f.o.b. Connellsville prompt	4.00 to 4.50
Foundry, by-product, Ch'go ovens	9.75
Foundry, by-product, New England, del'd	12.50
Foundry, by-product, Newark or Jersey City, delivered	10.50 to 11.52
Foundry, Birmingham	5.50
Foundry, by-product, St. Louis or Granite City	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.40 to $1.90
Mine run coking coal, f.o.b. W. Pa. mines	1.65 to 1.90
Mine run gas coal, f.o.b. Pa. mines	1.90 to 2.10
Steam slack, f.o.b. W. Pa. mines	1.30 to 1.40
Gas slack, f.o.b. W. Pa. mines	1.40 to 1.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.	$88.00 to $95.00
Foreign, 80%, Atlantic or Gulf port, duty paid	$88.00 to 110.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$32.00 to $34.00
Domestic, 16 to 19%	31.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$85.00
75%	145.00

	Per Gross Ton Furnace		*Per Gross Ton Furnace*
10%	$42.00	12%	$42.00
11%	42.00	14 to 16%	$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

	Per Gross Ton		*Per Gross Ton*
10%	$34.00	12%	$38.00
11%	36.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

	Per Gross Ton		*Per Gross Ton*
6%	$26.50	10%	$32.00
7%	27.50	11%	34.00
8%	28.50	12%	36.00
9%	30.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr, delivered	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$17.50 to $18.00
No. 2 lump, Illinois and Kentucky mines	$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid,	$17.41 to $18.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works	
	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to 7.50	

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	$48.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4.00c. per lb. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. per lb. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.50c. to 6.25c. per lb. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
⅞ in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅝ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	Per 100 Net U.S.S.		Per 100 Net S.A.E.	Per 100 Net U.S.S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
⅜-in.	0.515	0.515	¾-in.	3.60	3.60
7/16-in.	0.62	0.66	1-in.	5.65	5.80
½-in.	0.79	0.90	1¼-in.	8.90	8.90
9/16-in.	1.01	1.05	1¼-in.	12.60	13.10
⅝-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅞-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.50 to $2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70 and 10 to 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened,	80 and 5
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S. A. E. thread,	80, 10 and 10
Upset set screws	80, 10 and 5
Milled studs	70 and 5

Chicago

Steel Situation Less Favorable—Foundry Coke Declines 75c.

CHICAGO, April 13.—The situation in finished steel products is not so favorable as it was a week ago. Although mills are still swinging along at a high rate of production, consumers are less active and producers' backlogs are being proportionately reduced. In plates, shapes and bars specifications for the week are about equal to shipments, but new buying is admittedly below the current rate of deliveries. The week has been very quiet so far as sheet makers are concerned, and with rolling schedules, in many cases, of not more than a week, mills are finding this an opportune time to make improvements to rolling equipment. Although demand for finished steel has eased off, producers have not yet found it advisable to slow down blast furnace operations, the number of active steel works blast furnaces remaining at 29 out of 35 in the district.

The automobile industry is taking less steel, and parts makers are slowing down as the result of what now appears to have been an overproduction during the earlier months of the year. The demand for standard-section rails is good when the time of year is taken into account, and makers are of the opinion that the heavy purchases made during the past few months will not cover the spring and early summer requirements of the railroads. One railroad placed 6000 tons this week with the Tennessee Coal, Iron & Railroad Co., and Chicago makers have booked 4000 tons in miscellaneous lots.

The scrap market shows further weakness in prices in the absence of demand. Yard operations have been reduced to a minimum, but the supply of sorted scrap continues to gain on consumption. The reduction of $1 last week on the various grades of northern pig iron has not greatly added to the activity of the market. In fact, users are still inclined to cover only at short range and to await further developments.

Pig Iron.—Bessemer ferrosilicon and silvery iron have been reduced $2 a ton. Fourteen to 16 per cent ferrosilicon is quoted at $46.79, delivered, and 8 per cent silvery at $28.50, Jackson, or $33.29, delivered. A user north of Chicago has placed 700 tons of 10 per cent silvery at $32, Jackson, or $36.79, delivered. Northern pig iron is steady at $22, local furnace. The reduction of $1 last week had no stimulating effect upon the market during the earlier part of last week, but within the past few days there have been moves on the part of some buyers to cover forward requirements. This may account, in part, for the falling off during the week in spot sales, although there can be no denial of the fact that the general run of foundries are not so busy as during March. The automobile industry is slowing down, and foundries catering to that class of trade are feeling the pinch of less active operations. Producers are operating at an unchanged rate and are slowly building up balancing stocks at the furnaces.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$22.00
Northern No. 1 foundry, sil. 2.25 to 2.75	22.50
Malleable, not over 2.25 sil.	22.00
High phosphorus	22.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	$27.01 to 28.01
Southern No. 2 (barge and rail)	26.18 to 27.18
Low phos., sil. 1 to 2 per cent, copper free	31.20 to 31.70
Silvery, sil. 8 per cent	33.29
Ferrosilicon, 14 to 16 per cent	46.79

Plates.—The Burlington has bought 500 all-steel hopper cars, requiring about 5000 tons of plates, shapes and bars. The placing of this contract virtually closes out the list of freight cars pending from railroads entering Chicago. The Chicago, Milwaukee & St. Paul is said to have withdrawn its inquiry for 500 car bodies. Local mills have had a good week in specifications from car builders, which totaled more than 30,000 tons. For the entire country new inquiry for car materials during the week probably does not call for more than 6000 tons of plates, shapes and bars, and 1400 axles. New buying of plates has declined since a week ago, and is not equal to shipments. The Chicago mill price of 2.10c. is steady, and no evidences of shading have appeared.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Ferroalloys.—Several small tonnage sales of ferromanganese are reported at $88, seaboard, or $95.56, delivered. Spiegeleisen is quiet, and the only change in the market is that the 19 to 21 per cent grade is now available. A carload of this material brought $34, Hazzard, Pa., or $41.76, delivered.

We quote 80 per cent ferromanganese, $95.56, delivered Chicago; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $41.76, delivered Chicago.

Sheets.—New buying is very light, and specifications have fallen off so that mill schedules are on a week-to-week basis, except in the case of blue annealed. Mill operations have been reduced and now range from 75 to 80 per cent of capacity. Buyers, as a general rule, are not inclined to cancel orders and are taking the tonnage already on books. Although there has been no change from the quotations of a week ago, the price situation is less steady.

Chicago delivered prices from mill are 3.50c. for No. 28 black, 2.65c. for No. 10 blue annealed and 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Structural Material.—The building industry in this district appears to have struck an even gait, and there is little change from the situation of a week ago. Chicago building permits in March showed a gain of 6 per cent over those of the same month last year, and for the first quarter they totaled $78,000,000, as compared with an average of $56,000,000 for the past five years. The outstanding structural inquiry for the week is 3000 tons for the Chatelaine Tower Building, Chicago. Among prospective projects is a 36-story office building for the Loop district. Structural shops are buying very little stock-length material, preferring to depend upon mill deliveries for current requirements. In some quarters it is reported that competition is growing keener, as a number of shops see the end of present schedules near at hand. Specifications received by the mills during the week are approximately equal to shipments.

The mill quotation on plain material is 2.10c., per lb., base, Chicago.

Wire Products.—Weather favorable to distribution in country districts is commencing to stimulate the jobbing trade, but it is probable that the full effect of spring weather will not be felt until country roads have become well dried out. The railroads have been good buyers this spring and now are entering specifications at a liberal rate, particularly in nails. Business in the extreme South is active, and prospects in the Missouri River Valley are reported good. The demand for nails throughout the country is slightly improved and it is expected to expand further with warmer weather. Specifications from the manufacturing trade are in good volume, although some industries, such as automobile parts makers, are slowing down. Mill prices are shown on page 1089.

Bars.—There is a noticeable recession in the demand for soft steel bars, and new business is not equal to shipments. Reinforcing bar warehouses appear to have fair stocks, and although the week was a fairly active one in reinforcing awards, dealers are drawing on stocks and are in no hurry to replenish them. The Chicago mill price is steady at 2.10c. Demand for alloy steel bars is slightly less active as a result of curtailed automobile production. Chicago mills continue to operate close to capacity, and prices are unchanged. Makers of bar iron have booked 1000 tons of new business within the week. Specifications against contracts are fair and call for prompt shipment. Prices are steady at 2c., Chicago. With modified weather the demand for fence posts has again taken on seasonal proportions,

and makers report heavy shipments. Second quarter contracts for rail steel, usually placed about this time by bed manufacturers, are slow in being closed. On the other hand, demand for reinforcing bars is good. Both new business and specifications in rail steel are about equal to shipments.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c. base, Chicago.

Rails and Track Supplies.—Makers of standard-section rails believe that the railroads have not purchased sufficient tonnage to cover their spring and early summer requirements. Close to 10,000 tons of new business, unexpected by the mills, was placed within the week. It is estimated that 80 per cent of last winter's contract tonnage is going into replacements and 20 per cent into extensions and new trackage. Specifications both for rails and track accessories are in large volume, and mills are pressed to capacity. Demand for light rails is diminishing with each succeeding year. Figures now available show that 163,000 tons of light rails were contracted for in 1925, the smallest tonnage for any year in the past two decades. The decline reflects the depressed condition of the coal industry.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, $36 to $38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. per lb. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. to 2.35c., mill; angle bars, 2.75c., mill.

Bolts, Nuts and Rivets.—Specifications from the agricultural machinery makers are not so heavy because of seasonal conditions, but on the other hand, demand from the railroads has increased. Specifications for small rivets are heavier and the market is quoted at 70 and 10 to 70 and 5 off list, with a strong tendency toward the latter discount. Makers' operations are steady and average close to 85 per cent of capacity.

Hot-Rolled Strip.—The demand is somewhat easier. Prices, which are unchanged, are shown on page 1089.

Cast Iron Pipe.—Demand for cast iron pipe is well sustained, and both inquiries and awards for the week are in good volume. Public lettings are being made with little delay, and it is reported that a good tonnage is being taken by public utilities and private interests. Current bookings of pipe shops are about equal to shipments. Milwaukee, on bids opened April 8, has awarded 1440 tons of 30 to 48-in. plain pipe to the United States Cast Iron Pipe & Foundry Co. at $46.90 per ton, delivered, or $38.40 base Birmingham. Milwaukee also awarded to the same maker 330 tons of lugged pipe at $66.90, delivered. The National Cast Iron Pipe Co. booked 150 tons of 6-in. Class B pipe for Iron Mountain, Mich., at $41.90, base Birmingham. The same pipe maker booked 150 tons of 6 to 12-in. for Warsaw, Mich., and 350 tons of 6, 8 and 12-in. for Peoria, Ill. Tonnages recently placed with contractors by Waukegan, Ill., and Libertyville, Ill., will come before makers some time this week. Saginaw, Mich., is in the market for 650 tons of 24-in., 74 tons of 20-in., 62 tons of 8-in., and 101 tons of 6-in. Class B. Greenville, Ohio, opens bids this week on 250 tons of 4, 6 and 8-in. Class B.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in. $53.20 to $54.20; 6-in. and over, $49.20 to $50.20; Class A and gas pipe, $4 extra.

Reinforcing Bars.—This market is more active than for several months past. New inquiry continues to come in freely and reports indicate that there is no slowing down upon the part of architects, who are preparing many new projects. Milder weather has brought encouragement to contractors, with the result that the week's lettings bulk fairly large in the aggregate. Warehouse operations in March were better than in February, and dealers' bookings in March were larger than in the same month last year. With 4000 tons of bars on inquiry, an active spring trade is looked for. Lettings of 100 tons or over each total more than 2200 tons for the week. Fresh inquiries and recent awards are shown on page 1103.

Coke.—By-product foundry coke has been reduced to $9.75, ovens, or $10.25, delivered in the Chicago switching district. This represents a reduction of 75c. per ton from the price level which was maintained throughout the past winter. There is a tendency upon the part of some users to buy close to actual requirements, and there have been some spot sales within the week. Shipments against contracts are moving forward at an undiminished rate, and makers in the Chicago district are operating at full capacity.

Old Material.—Prices continue to give ground and there are no indications that present quotations represent the bottom. In fact, heavy melting steel is down 25c., now being quoted at $13.50 to $13.75. There is virtually no demand for any of the grades listed, and trading is largely among dealers. One of the larger users of heavy melting steel placed a small tonnage at $13.75, but now appears to have withdrawn from the market. As yet there has been no appreciable increase in the movement of scrap as the result of mild weather, but it is expected that the next week or two will see a greater volume in transit. Most foundries are less active, and this outlet for scrap appears to be closed, at least for the time being. A sale of 600 tons of rolled steel wheels within the range of present quotations is reported, and a user of railroad malleable took a fair tonnage at $18 per gross ton, delivered. The Rock Island is offering 6500 tons of scrap, and a Santa Fe list totals 4550 tons.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

	Per Gross Ton	
Heavy melting steel	$13.50 to	$13.75
Frogs, switches and guards, cut apart, and miscellaneous rails	15.00 to	15.50
Shoveling steel	13.25 to	13.50
Hydraulic compressed sheets	11.50 to	12.00
Drop forge flashings	10.00 to	10.50
Forged, cast and rolled steel car wheels	18.00 to	18.50
Railroad tires, charging box size	18.25 to	18.75
Railroad leaf springs, cut apart	18.00 to	18.50
Steel couplers and knuckles	16.50 to	17.00
Coil springs	18.75 to	19.25
Low phos. punchings	17.00 to	17.50
Axle turnings	15.00 to	15.50
Relaying rails, 56 lb. to 60 lb.	25.00 to	26.00
Relaying rails, 65 lb. and heavier	26.00 to	31.00
Rerolling rails	16.25 to	16.75
Steel rails, less than 3 ft.	17.50 to	18.00
Iron rails	15.00 to	15.50
Cast iron borings	11.25 to	11.75
Short shoveling turnings	11.25 to	11.75
Machine shop turnings	8.25 to	8.75
Railroad malleable	17.50 to	18.00
Agricultural malleable	16.50 to	17.00
Angle bars, steel	16.00 to	16.50
Cast iron car wheels	16.50 to	17.00
	Per Net Ton	
No. 1 machinery cast	16.50 to	17.00
No. 1 railroad cast	15.50 to	16.00
No. 1 agricultural cast	15.50 to	16.00
Stove plate	13.75 to	14.25
Grate bars	13.00 to	13.50
Brake shoes	12.50 to	13.00
Iron angle and splice bars	15.00 to	15.50
Iron arch bars and transoms	20.00 to	20.50
Iron car axles	24.50 to	25.00
Steel car axles	17.50 to	18.00
No. 1 railroad wrought	12.75 to	13.25
No. 2 railroad wrought	12.00 to	12.50
No. 1 busheling	10.25 to	11.00
No. 2 busheling	6.75 to	7.25
Locomotive tires, smooth	16.50 to	17.00
Pipes and flues	10.00 to	10.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel	2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 28 black sheets	4.10c.
No. 10 blue annealed sheets	3.50c.
No. 28 galvanized sheets	5.25c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent off List
Machine bolts	50 and 5
Carriage bolts	47½
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.	$3.30
Common wire nails, base per keg	3.05
Cement coated nails, base per keg	3.05

Cleveland

Sheets and Cold Strip Lower—Further Declines in Pig Iron

CLEVELAND, April 13.—Business in finished steel appears to be keeping up to the recent volume, outside of some slackening in the demand from the automotive industry. Orders for small lots of bars, plates and structural material for early shipment show no falling off, but some of the mills are entering very little new business, their orders being mostly specifications on contracts. Some of the smaller mills that cater largely to the automotive industry are not so well filled with orders as they were a few weeks ago, because of suspensions of sheet and cold-rolled strip steel deliveries by two or three of the automobile manufacturers who have curtailed production. Most motor car builders are following a hand-to-mouth policy in ordering steel. However, reports from Detroit indicate that the production of cars is being continued at recent schedules, and that the feeling in the trade is generally optimistic.

New inquiry in the structural field in northern Ohio is very light. Locally building work is almost at a standstill because of a strike. In municipal work an inquiry has come from Kansas City, Mo., for 1000 tons of riveted steel pipe.

Prices are unchanged and firm at 2c., Pittsburgh, for steel bars, 1.90c. for plates, and 1.90c. to 2c. for structural material. Light rails are somewhat irregular, and on rerolled light rails quotations of $3 to $4 a ton below new billet steel rails have appeared.

Iron Ore.—Several small-lot sales were made during the week, but little new inquiry came out. A St. Louis district consumer, who is in the market for 200,000 tons, is expected to close this week. Owing to ice conditions in Lake Superior, shippers do not look for an opening of navigation until May 1.

Pig Iron.—The $1.50 a ton break in the price of foundry iron in the Valley district to $19, furnace, has been followed by a $1 a ton reduction to $19 by Cleveland furnaces for outside shipment, and another 50c. reduction to $20 at furnace for local delivery. Lake furnaces outside of Cleveland have reduced their prices $1 a ton, making the new price $20.50, furnace, for foundry and malleable iron for delivery in western Ohio and Indiana and $21, furnace, for Michigan delivery. Cleveland furnaces, which had recently reduced prices, made the additional 50c. cut for local delivery to keep Valley iron out of this city, their delivery price in Cleveland now being 26c. below $19 Valley iron delivered in Cleveland. The spread in prices between Valley and Lake district furnaces remains virtually the same as before the reduction a week ago. This will permit low cost furnaces to absorb freight rates and reach out, as they have done recently in some points to the West, usually served by furnaces located near the consuming points. The price reductions have had mixed effects. Lower prices have brought some consumers into the market, but have caused others to defer buying in the belief that prices may go still lower. While the price cut has not brought about a buying movement, sales increased somewhat the past week, those made by local interests amounting to about 20,000 tons. A fair number of the smaller consumers came in the market, but larger buyers are holding off. Some producers now feel that $19 is likely to become the established price for the third quarter. Basic iron is quoted at a range of $18.50 to $19, furnace. Makers of Jackson County silvery iron have cut prices $2 a ton, but the new price is regarded as somewhat out of line as compared with the present prices of other grades of iron.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace	$18.50 to $19.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.50
Southern fdy., sil. 1.75 to 2.25	27.51 to 28.01
Malleable	20.50
Ohio silvery, 8 per cent	31.52
Standard low phos., Valley furnace	27.50

Coke.—Demand for foundry coke is light, with prices unchanged at $4.25 to $5.25, ovens, for standard Connellsville brands. By-product domestic coke is moving fairly well at the unchanged prices of $4.50 to $5, Ohio ovens. Ohio by-product foundry coke is quoted at $8, Painesville, for April shipment.

Bolts, Nuts and Rivets.—Business in bolts and nuts is holding up well, although specifications from the automobile industry are not so heavy as a few weeks ago. There is a good demand from the jobbing trade, although jobbers are keeping their stocks low and ordering in car lots. Prices are firm. Large rivets are in fair demand. Small rivets continue to move in very good volume.

Semi-Finished Steel.—Very little new inquiry is coming out, and specifications on contracts are light. Many consumers either have good stocks or have not yet taken out all their material on first quarter contracts. No concessions from regular quotations are reported.

Old Material.—Prices still show a downward tendency, which seems to have been helped along by the cut in pig iron prices. Several grades are lower, but others in absence of sales are unchanged. A Cleveland consumer during the week purchased 1000 tons of heavy melting steel at $14.50, the price it paid the week before, but this grade has since declined 25c. Sales of borings and short turnings were reported at $13.25, for Canton delivery. There is little trading between dealers, as few have short orders.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$13.50 to $13.75
Rails for rolling	16.75 to 17.00
Rails under 3 ft	18.50 to 19.00
Low phosphorus melting	16.75 to 17.00
Cast iron borings	11.00 to 11.25
Machine shop turnings	10.75 to 11.00
Mixed borings and short turnings	11.00 to 11.25
Compressed sheet steel	12.75 to 13.00
Railroad wrought	13.75 to 14.25
Railroad malleable	19.50 to 20.00
Light bundled sheet stampings	11.50 to 11.75
Steel axle turnings	13.50 to 14.00
No. 1 cast	16.50 to 17.00
No. 1 busheling	11.00 to 11.25
Drop forge flashings	12.50 to 13.00
Railroad grate bars	13.00 to 13.25
Stove plate	13.00 to 13.25
Pipes and flues	11.50 to 12.00

Sheets.—Automobile body sheets, after holding firm for some time in spite of weakness in other grades, have slipped $2 a ton to 4.30c., Pittsburgh, on sales in the Detroit territory the past week. Shipments on old contracts are still being made at 4.40c. Other grades show a tendency toward weakness. On blue annealed sheets 2.40c., Pittsburgh, or $2 a ton below the regular price, has become a fairly common quotation. Galvanized sheets are irregular, with 4.50c., Pittsburgh, fairly common, and some quotations of 4.50c., Youngstown, appearing. Most black sheet business is being taken at 3.25c., although 3.35c. has not disappeared. New business is light, and specifications are being held back by some of the automobile companies and makers of automobile stampings. While most of the mills are still comfortably filled with business, their order books are not so large as a few weeks ago.

Strip Steel.—Hot-rolled strip steel continues in fair demand, with no deviation from the regular prices. The slowing down by some of the automobile manufacturers is reflected in a decreased demand for cold-rolled strip steel, and some of the mills are in need of orders.

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes	3.00c.
Mild steel bars	3.00c.
Cold-finished rounds and hexagons	3.90c.
Cold-finished flats and squares	4.40c.
Hoops and bands	3.65c.
No. 28 black sheets	4.10c.
No. 10 blue annealed sheets	3.25c.
No. 28 galvanized sheets	5.25c.
No. 9 annealed wire, per 100 lb	$3.00
No. 9 galvanized wire, per 100 lb	3.45
Common wire nails, base, per keg	3.00

Concessions to 3.75c., Cleveland or Pittsburgh, appear to have become more general.

Reinforcing Bars.—New inquiry is light, and locally there is no activity because building work is tied up by a strike. Billet steel reinforcing bars are commonly quoted at 2c., but this price is untested. Rail steel bars are unchanged at 1.80c., mill.

Warehouse Business.—Orders from manufacturing plants are good, but the demand from contractors for sheets and other material used in building work has fallen off materially because a strike has caused suspension of work. Prices are firm.

New York

Await Test of Pig Iron Market—Steel Output Maintained

NEW YORK, April 13.—The sharp break in Valley pig iron has had a sentimental effect on this market, although a real test of prices in this territory has not been made. Business has been light, and the weakness in other market centers has only served to accentuate the caution of buyers. Orders placed in this district during the past week probably did not total more than 6000 tons. Prices on domestic iron are nominally unchanged. An inquiry from the Utica Heater Co., Utica, N. Y., for 3000 to 5000 tons for delivery at the rate of 1000 tons a month is expected to break or sustain the Buffalo market. The New York Air Brake Co. is inquiring for 1000 tons of foundry iron for its Watertown, N. Y., plant. The Richardson & Boynton Co. is inquiring for 800 tons of foundry iron for its Dover, N. J., works. The General Electric Co. has closed for 500 tons for its Bayway, N. J., plant. The New Jersey Zinc Co. has closed for 400 tons. Prices on foreign iron are substantially the same as a week ago, but less distress material is being pressed on the market.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.52
Buffalo fdy., sil. 1.75 to 2.25	25.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	29.54

Ferroalloys.—There are no new developments in the ferromanganese market. The alloy is still available from one or two sources at $88, seaboard basis, with all British producers still quoting $110. The domestic producer who was selling at $90 is well booked and is accepting no business under $95, furnace. With nearly all consumers fully covered, demand is very light and sales of only a few carloads here and there are noted. Specifications on contracts continue heavy. There have been a few sales of spiegeleisen, possibly 200 to 300 tons, in a quiet market at prevailing prices. Specifications on contract for this alloy as well as for 50 per cent ferrosilicon and standard ferrochromium continue heavy.

Finished Steel.—While the volume of buying shows some signs of declining, orders and specifications being below shipments, the falling off is slight and does not compare with the abrupt drop in business a year ago. As a matter of fact, mill operations are continuing at practically the March rate. The mills have not the backlogs they had earlier in the year, but the day-to-day buying is in fairly good volume. In such a situation steel companies cannot see very far ahead, but the opinion prevails that there will be a steady volume for some time to come, with such seasonal variations as are to be expected. Sheets are the only line which shows signs of price weakening, and even here, as has been the case for weeks, only a few mills are yielding to persuasion of buyers for concessions. The new plate price of 1.90c., Pittsburgh, is being well maintained, although not supported by any great volume of buying. Some concessions are available on structural shapes, usually $1 or $2 a ton, but these come from one or two mills. Wire nails are now firm at $2.65 per keg, but there has been no open change in the price. The largest railroad buying of the week was that of the Pennsylvania Railroad for about 2000 freight cars and some passenger equipment. The structural mills are busy filling orders against contracts placed during the past few months. The Structural Steel Board of Trade of New York estimates that structural steel bookings in March in the New York district were 29,563 tons, which was slightly below the February total. This includes work taken by non-members as well as members.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c. per lb.; plates, 2.24c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Warehouse Business.—Demand for structural material is increasing and the tonnages bought from stock are slightly larger. Reinforcing bars, however, continue quiet. Prices on both black and galvanized sheets are firm at 4.50c. per lb. and 5.65c. per lb., base, respectively. While Swedish charcoal iron bars are still quoted at 7.00c. to 7.25c. per lb., base for delivery out of stock, importers without stocks in this country quote on deliveries of a month to two months 6.50c. to 6.75c. per lb., base. This lower quotation is reported to be available from dealers whose stocks do not include a full range of sizes.

Cast Iron Pipe.—Not many new inquiries have appeared in the past week, but some pending business was awarded. All makers are apparently well booked with business for the next two months or more and prices are fairly firm except on desirable business for which there is keen competition. Norwalk, Conn., has awarded 3500 tons of pipe, Prosser, Wash., about 700 tons and Holyoke, Mass., after considerable delay, 5100 tons, all to B. Nicoll & Co., New York.

Coke.—The market continues quiet with only a

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.24c. to 3.34c.
Soft steel bars and small shapes	3.14c. to 3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons	4.00c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	6.25c.
Hoops	4.49c.
Bands	3.99c.
Black sheets (No. 28 gage)	4.50c.
Blue annealed sheets (No. 10 gage)	3.89c.
Galvanized sheets (No. 28 gage)	5.65c.
Long terne sheets (No. 28 gage)	6.35c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. and 7.00c.
	Per Cent Off List
Machine bolts, cut thread	40 and 10
Carriage bolts, cut thread	30 and 10
Coach screws	40 and 10
Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.	$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt	46	29
¾-in. butt	51	37
⅛-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
½-in. butt	4	+19
¾-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
3-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 x 20 In.)

	Primes	Seconds
Coke, 100-lb. base box	$6.45	$6.20
Charcoal, per box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 In.)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

moderate volume of purchasing and prices unchanged. Connellsville foundry is quotable at $8.41 to $9.41 per ton, delivered Newark and Jersey City, N. J., districts, $8.53 to $9.53 per ton, delivered in northern New Jersey and $9.29 to $10.29 per ton, delivered New York or Brooklyn. Furnace is quoted at about $9.91, delivered Newark and Jersey City districts and $7.03, delivered in northern New Jersey. By-product is unchanged at $10.51 to $11.52 per ton, delivered Newark or Jersey City, N. J.

Old Material.—A satisfactory volume of scrap is apparently coming out at the present buying prices but purchasing by eastern Pennsylvania and local consumers continues well below normal. No. 1 heavy melting steel is being purchased at $15.50 to $16 per ton delivered to mills in eastern Pennsylvania and occasionally as high as $16.25 per ton delivered Coatesville, Pa., is still paid. Although the tendency of the consuming market is apparently downward, a large consumer in eastern Pennsylvania having bought, it is reported, about 12,000 tons of heavy melting steel at $15.50 per ton, delivered, broker buying prices for this delivery continue at a minimum of $15.50 per ton. Specification pipe is being purchased at $16 to $16.25 per ton, delivered to a Lebanon, Pa., consumer and at $15 to $15.50 per ton, delivered to Columbia, Pa. Stove plate is quiet, with local foundry consumers temporarily out of the market.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	$10.50 to $11.00
Heavy melting steel (railroad or equivalent)	12.00 to 12.75
Rails for rolling	12.75 to 13.00
Relaying rails, nominal	23.00 to 24.00
Steel car axles	19.50 to 20.00
Iron car axles	23.75 to 24.25
No. 1 railroad wrought	14.50 to 15.00
Forge fire	10.00 to 11.00
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (steel mill)	9.75 to 10.25
Cast borings (chemical)	12.50 to 13.00
Machine shop turnings	9.75 to 10.25
Mixed borings and turnings	10.00 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.50 to 12.50
Stove plate (steel mill)	9.75 to 10.25
Stove plate (foundry)	11.25 to 11.75
Locomotive grate bars	11.25 to 11.75
Malleable cast (railroad)	16.00 to 17.00
Cast iron car wheels	13.50 to 14.00
No. 1 heavy breakable cast	12.50 to 14.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$17.00 to $17.50
No. 1 heavy cast (column, building material, etc.), cupola size	15.50 to 16.00
No. 2 cast (radiators, cast boilers, etc.)	14.50 to 15.00

Some Reductions in Detroit Scrap

DETROIT, April 13.—A further reduction of 25c. per ton on borings and short turnings, No. 1 busheling and hydraulic compressed steel scrap was registered during the past week, and some sales of automobile cast were made at $1 below last week's quotation. Mills and furnaces apparently are all well supplied, and one Ohio mill, which has a contract with a large producer, is evidently overstocked, in that this local company is offering some excess material.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.50 to $14.00
Borings and short turnings	9.75 to 10.25
Long turnings	8.50 to 9.00
No. 1 machinery cast	17.00 to 18.00
Automobile cast	21.50 to 22.50
Hydraulic compressed	10.50 to 12.00
Stove plate	13.50 to 14.50
No. 1 busheling	11.50 to 12.00
Sheet clippings	7.00 to 7.50
Flashings	10.50 to 11.00

Abrasive materials, with various statistics relating thereto, are covered in a pamphlet issued by the Bureau of Mines, Department of Commerce, Washington, the figures being for 1924. Production and sales of millstones, grindstones and pulpstones, corundum and emery and other abrasives are covered. World production figures are given.

Philadelphia

Cast Iron Pipe Company Buys About 20,000 Tons of Foreign Iron

PHILADELPHIA, April 13.—In an otherwise quiet pig iron market, the outstanding transaction was the purchase of about 20,000 tons of European iron by a cast iron pipe company. About 12,000 tons will go to its Birmingham plant and the remainder to Burlington, N. J. The delivered price on the iron to be shipped to Burlington is said to have been $19.50, duty paid, while the delivered price on the iron for Birmingham was not far out of line with the domestic market prices in that district.

The local steel market presents no new features, but the volume of buying, although mostly in small units, keeps fairly well up to that of last month. Some mill representatives report a slowing down during the last week, but this has not been sufficient as yet to alter materially the operating conditions at the mills. Prices are unchanged.

A slight softening in the scrap market has affected the prices of only a few grades—heavy melting steel, machine shop turnings, stove plate and grate bars.

Pig Iron.—The break in the prices of pig iron at Pittsburgh and in the Valleys a little more than a week ago has had no effect on the eastern Pennsylvania situation, except that a few buyers in discussing possible purchases have indicated an expectation of lower prices to come in the East. The Eastern situation is somewhat different, however, in that the furnaces of this district have substantial order books and one or two are oversold for second quarter. There is no inclination among furnace interests to make any concessions from the current quotations of $22 on No. 2 plain and $22.50 on No. 2X, except where it is necessary to equalize freight rates, and even this is seldom done. Foreign iron continues a disturbing factor, but the furnaces are making no effort to meet this competition on price. The purchase by a cast iron pipe company of about 8000 tons of European iron for its Burlington, N. J., works at $19.50, duty paid, represented a saving of nearly $3 a ton as compared with domestic iron. In purchasing 12,000 tons of foreign iron for its Birmingham plant, at no important saving, the cast iron pipe company is said to have been influenced largely by the attitude of Birmingham producers on prices. The Midvale Co., Nicetown, Philadelphia, is inquiring for 2000 tons of basic and 1000 tons of foundry iron. Eastern pig iron men will go in force to Washington to be represented at the hearing there April 20 on the pig iron tariff.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$22.76 to $23.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.26 to 24.13
East. Pa. No. 1X	23.76 to 24.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic, delivered eastern Pa.	21.75 to 22.50
Gray forge	22.00 to 22.50
Malleable	22.50 to 23.00
Standard low phos. (f.o.b. furnace)	22.50 to 23.50
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Ferromanganese.—Consumers of ferromanganese are seemingly so well covered that almost no inquiry comes into the market. Nominally prices remain at $88 to $90, but have had no recent test.

Billets.—Prices on billets are $35, Pittsburgh, for rerolling quality and $40 for forging quality, but there is so little buying that no gage of the strength of these prices is afforded.

Plates.—Eastern plate mills are operating at a fairly good rate on the orders booked just prior to the recent price advance. New business is not in large volume, but is sufficient to show a firm determination on the part of all mills to adhere to 1.90c., Pittsburgh.

The Wilmington, Del., plant of the Bethlehem Shipbuilding Corporation will build a double-track car float for the Southern Railway. The Bureau of Construction and Repair, Navy Department, Washington, will take bids up to 10 a. m. April 27 for approximately 1640 tons of special treatment plates for light cruiser No. 24.

Structural Material.—Structural mills of the Bethlehem Steel Corporation and the American Bridge Co. are reported to be operating at a very full rate. Mills of the Phoenix Iron Co. and Eastern Steel Co. are running at about two-thirds of capacity. New business shows some signs of falling off, but several fair-sized structural projects are pending, including 3000 tons for the City Hall Annex, Philadelphia, plans for which will be issued soon. The price situation is unchanged, quotations ranging from 1.80c. to 1.90c., Pittsburgh.

Bars.—Specifications against contracts and new orders for steel bars are coming to the mills a little more slowly than last month. Consumers are ordering from hand to mouth, but are usually in a hurry for shipments. Prices remain firm at 2c., Pittsburgh. Eastern bar iron makers continue to quote 2.22c., Philadelphia.

Sheets.—Reports vary as to the strength or weakness of sheet prices. Some concessions are still reported, but different opinions exist as to whether these are as frequent as was the case a few weeks ago. Most of the mills are adhering to 2.50c. on blue annealed, 3.35c. on black and 4.60c. on galvanized, all Pittsburgh basis, but cuts of $2 a ton on black and galvanized are not uncommon.

Warehouse Business.—Local jobbers are enjoying a good volume of buying at fairly stable prices.

Imports.—Last week's imports of pig iron were again large, 12,645 tons arriving at Philadelphia. Of this 6945 tons came from England, 3500 tons from Germany, 2000 tons from France and 200 tons from Sweden. Other imports were 7100 tons of chrome ore from Portuguese East Africa; 150 tons of ferromanganese from England; 631 tons of cast iron pipe from France; 104 tons of structural steel from Belgium.

Old Material.—The Eastern scrap market has lapsed into dullness, following a few weeks of fairly active buying which carried some prices up from 50c. to $1 a ton. Practically all of the Eastern mills have satisfied their requirements for 30 to 60 days, and the demand for heavy melting steel is confined largely to needs of brokers in filling their contracts. Week before last sales were made at $16.75, but this price is no longer obtainable anywhere in the East. One mill will take small lots at $16, and this also is the price which brokers with contracts are offering. We quote this grade at $16 to $16.50, but the trend of the market indicates that the higher figure of this range may disappear within the week. The highest price now obtainable for machine shop turnings is $13.50, a drop of 50c. a ton, and a 50c. reduction on stove plate and grate bars is also recorded in the prices below.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$16.00 to $16.50
Scrap rails	16.00 to 16.50
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under	20.00 to 20.50
Couplers and knuckles	19.00 to 19.50
Rolled steel wheels	19.00 to 19.50
Cast iron car wheels	17.50 to 18.00
No. 1 railroad wrought	17.50 to 18.00
No. 1 yard wrought	16.50 to 17.00
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	14.00
Mixed borings and turnings (for blast furnace)	13.00 to 13.50
Machine shop turnings (for steel works)	13.50
Heavy axle turnings (or equivalent)	15.00
Cast borings (for steel works and rolling mill)	14.00
Cast borings (for chemical plant)	15.50 to 16.00
No. 1 cast	17.50 to 18.50
Heavy breakable cast (for steel works)	17.00
Railroad grate bars	14.00
Stove plate (for steel works)	14.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.00 to 16.50
Shafting	21.00 to 22.00
Steel axles	22.00 to 23.00

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¾-in. and heavier	2.80c. to 3.00c.
Tank steel plates, ⅜-in.	3.00c.
Structural shapes	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to ¼-in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 28 black sheets	4.65c.
No. 10 blue annealed sheets	3.50c.
No. 28 galvanized sheets	5.85c.
Diamond pattern floor plates—	
¼-in.	5.30c.
⅜-in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Norway iron	6.50c.

To Ascertain Views on Covering Weights in Bidding on Foundry Work

WASHINGTON, April 13.—The special committee appointed at the foundry conference held under the auspices of the National Committee on the Utilization of Metals, Department of Commerce, on Feb. 25, met here last Thursday and decided to prepare and send out a questionnaire as a survey to determine if there be a favorable attitude toward the practice of showing weights of castings on blue prints or in inquiries. The questionnaire will be accompanied by a letter and will be sent to foundry operators, distributers and users. It will be in the nature of a referendum and the result of the survey will be reported back to the American Foundrymen's Association convention in Detroit in September. The chairman of the special committee is H. D. Hunter, American Malleable Casting Association, Dayton, Ohio. The other members of the committee are William H. Barr, National Founders' Association, Chicago; Norman C. Damon, National Automobile Chamber of Commerce, Washington; W. J. Corbett, Steel Founders' Society of America, Pittsburgh; A. G. Follette, American Railway Association, New York; J. J. McBride, American Car & Foundry Co., New York; A. B. Root, Jr., American Foundrymen's Association, Boston; Thomas E. Durban, Erie City Iron Works, Erie, Pa.; A. G. Hopcraft, National Association of Purchasing Agents, Cleveland.

To Curb Direct Shipments of Cast Pipe Fittings

Manufacturers of malleable and cast iron fittings and drainage fittings have placed in effect a 10 per cent extra for direct shipments to jobbers' customers for lots of less than 1000 lb. These fittings are handled largely by mill supply houses. It is expected that the adoption of the extra will cut down the amount of direct shipments and result in a corresponding increase in shipments from warehouses.

To Discuss Oxygen in Foundry Practice

The April meeting of the Pittsburgh Foundrymen's Association will be held Monday evening, April 19. On invitation of Clifford B. Connelley, director, and William H. Dorsey, head of the foundry school, Carnegie Institute of Technology, dinner is to be served at the Carnegie Inn and the meeting in room 104 of the College of Industries. A paper, "Efficiency of Oxygen Purity for Cutting in Foundry Practice," is to be presented by John J. Crowe, in charge of apparatus research and development department of the Air Reduction Sales Co., New York, who also will demonstrate mechanical cutting and oxygen purity tests.

San Francisco

San Diego Places 6000 Tons of Plates—Shapes and Bars More Active

SAN FRANCISCO, April 9 (*By Air Mail*).—Outstanding among developments of the week was an award by the city of San Diego, Cal., of 6000 tons of steel for 17 miles of pipe line to the Western Pipe & Steel Co. of California. Lock-bar pipe will be furnished. About 2000 tons additional is still pending. Other features of the week have been an award by the East Bay Municipal Utility District, Oakland, Cal., of 2030 tons of reinforcing bars to the Columbia Steel Corporation, San Francisco, the definite announcement that bids on the Yakima, Wash., irrigation project, calling for 190 tons of bars and 2750 tons of structural shapes, will be opened April 29, and the apparent failure of the local carpenters' strike to affect building operations in the San Francisco Bay district. General buying during the week has been slightly heavier, inquiries have been more numerous, and prices in all departments of the market continue firm.

Pig Iron.—Local distributers are interested in Eastern reports of a break of $1 to $1.50 a ton on pig iron in some of the leading production centers. Local quotations are unchanged, and demand has slightly improved, although there is no large buying.

	Per Gross Ton
*Utah basic	$27.00 to $28.00
*Utah foundry, sil. 2.75 to 3.25	27.00 to 28.00
**English foundry, sil. 2.75 to 3.25	25.00 to 26.00
**Belgian foundry, sil. 2.75 to 3.25	24.00
**Dutch foundry, sil. 2.75 to 3.25	24.00
**Indian foundry, sil. 2.75 to 3.25	24.00 to 25.00
**German foundry, sil. 2.75 to 3.25	24.00
**Chinese foundry, sil. 3 to 3.50	25.50

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Lettings total 760 tons; pending business calls for about 4000 tons. The largest individual award of the week, 430 tons for a school in Crocket, Cal., was taken by the Moore Dry Dock Co., Oakland. The largest project pending is 2750 tons for the Yakima, Wash., irrigation district, on which bids will be opened April 29. Plans for a new Government pier at Honolulu are expected to be out shortly. Eastern mills continue to quote 2.35c., c.i.f. Coast ports, on plain material.

Plates.—Contracts reported closed during the week call for 6950 tons, and pending business will require 2125 tons. The city of San Diego, Cal., has awarded 6000 tons to the Western Pipe & Steel Co. of California, and still has an additional 2000 tons to place. The Thermalito Irrigation District, Oroville, Cal., will open bids April 19 on 125 tons of light material for a pipe line. While it is believed that 2.25c., c.i.f. Coast ports, is possible on large tonnages, most of the Eastern mills continue to quote 2.30c. on current inquiries.

Bars.—Reinforcing bar lettings for the week total 3470 tons, and a number of fresh inquiries have come up, although most of these individually call for less than 100 tons. Local reinforcing bar jobbers quote as follows: 2.80c., base per lb. on lots of 250 tons; 2.95c., base per lb. on carload lots, and 3.20c., base, on less than carload lots.

Cast Iron Pipe.—The city of Los Angeles has awarded 739 tons of 24-in. Class B pipe, required under Specification 790-B, to the American Cast Iron Pipe Co. The city of Prosser, Wash., has placed 766 tons as follows: 685 tons of 6, 8 and 10-in., Class B to B. Nicoll & Co., and 81 tons of 12-in. Class B to an unnamed firm. Quotations are unchanged at $50 to $52 base, water shipment, San Francisco.

Steel Pipe.—The Associated Pipe Line Co., San Francisco, has placed about half of its recent inquiry for 150 tons of 2½ to 3-in. line pipe with the Associated Supply Co., San Francisco. No fresh inquiries of importance have come into the market, although distributers report a good volume of small orders and inquiries.

Warehouse Business.—A week of almost continuous rain has affected the demand from the rural districts to some extent, but jobbers say that sales are increasing. Prices are unchanged.

Ferromanganese.—Importers quote 80 per cent English ferromanganese at $110, duty paid, San Francisco. The Southern Pacific Co. is understood to have placed its recent inquiry for 150 tons with a local importer. No new business is known to have developed during the week.

Coke.—Demand is slightly stronger, although current sales are confined mainly to small tonnages. Importers quote as follows:

English beehive, $15 to $16 per ton at incoming dock, and English by-product, $12 to $14; German by-product, $11.50 to $12.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, ¾-in. to 2¾-in.	3.90c.
Spring steel, ¼-in. and thicker	6.30c.
No. 28 black sheets	4.75c.
No. 10 blue annealed sheets	3.75c.
No. 28 galvanized sheets	6.00c.
Common wire nails, base per keg	$3.50
Cement coated nails, base per keg	3.00

Birmingham

Southern Pig Iron Unaffected by Weakness in Other Markets

BIRMINGHAM, April 13.—Foundry pig iron output for April will be under totals of the past few months, and with considerable tonnage already sold for delivery over the next 60 days, the market in this district has a strong aspect. Surplus stocks of foundry iron are also limited. Some of the larger melters of iron have bought liberally for their second quarter needs, but not for all the business they expect to book. Prices are firm, with furnaces maintaining a minimum of $22 per ton, Birmingham, on No. 2 foundry, and quoting $23 for spot or small tonnage orders. The recent purchase of Ohio iron for a Louisville plant that heretofore bought most of its requirements in this district has brought out no comments. Buying has been less active during the past week, but this has not disturbed the confidence of sellers. Thirteen Alabama furnaces are in blast on foundry iron, 10 on basic and one on ferromanganese. Practically all of the foundry iron now being made is going to consumers in the South. A number of obsolete blast furnaces in this district are to be dismantled, according to programs now being worked out.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$22.00
No. 1 foundry, 2.25 to 2.75 sil.	22.50
Basic	22.00
Charcoal, warm blast	$30.00 to 32.00

Rolled Steel.—Practically every finishing mill and fabricating plant in Alabama is operating full. Plates are in strong demand, since tank makers here have recently booked considerable business. Sheets are also active, and wire and nails are moving. The rail and track accessory mills are producing and shipping large tonnages, with excellent prospects for coming months. Producers of concrete steel bars report considerable tonnage in sight and expect to run their shops steadily through the better part of the remainder of the year. Soft steel bars are unchanged at 2.15c. to 2.25c., base, per lb., Birmingham, and tank plates and structural shapes at 2.05c. to 2.15c.

Cast Iron Pipe.—Steady operation of all the cast iron pipe shops of the district is assured for some time to come, since lettings are numerous and unfilled tonnage is being built up. Output will be materially increased shortly. The West and Northwest are taking large quantities of pressure pipe from the Birmingham district. Demand for soil pipe and fittings has improved. Pressure pipe prices range from $40 to $41 per ton, base Birmingham, 6-in. and larger diameters.

Coke.—By-product coke plants in Alabama are running at capacity, and with the exception of iron and steel company ovens, none of them is accumulating stocks. Prices on foundry coke remain at about $5.50 per ton, ovens. Coke shipments to the Middle West have fallen off slightly in keeping with a diminishing demand.

Old Material.—The market here is quiet, but considerable material is moving. Melters continue to take tonnage on old orders, but are buying sparingly. Quotations are weak, heavy melting steel not commanding more than $13. There are no indications that prices will stiffen in the near future, and this accounts for the apathy of buyers.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	18.00 to 19.00
Iron axles	18.00 to 19.00
Steel rails	18.00 to 18.50
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 9.00
Rails for rolling	15.00 to 16.00

St. Louis

Price Reductions Have Little Effect on Pig Iron Buying—Scrap Lower

ST. LOUIS, April 13.—The recently announced reductions of $1.50 a ton on Valley pig iron and $1 a ton on Chicago iron have had little effect one way or the other on the situation in this district. No Valley iron is melted here, and the quoted price of $22 a ton at Chicago has meant nothing, because it is understood that for some time Chicago interests have been selling iron in this district at $21 and even as low as $20. The St. Louis Coke & Iron Corporation has not yet formally changed its quotations, but it is understood that it will meet competition. One Southern interest is quoting $23, base Birmingham, and another, $23.50, which eliminates them as factors in this district. A Missouri melter bought 300 tons of foundry iron from the Granite City maker. An upper Illinois specialty manufacturer is in the market for 500 tons, and a central Illinois melter wants 200 to 250 tons.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$23.16 to $24.16
Northern malleable, sil. 1.75 to 2.25	23.16 to 24.16
Basic	23.16 to 24.16
Southern fdy., sil. 1.75 to 2.25	26.42 to 27.92
Granite City iron, sil. 1.75 to 2.25	24.31

Finished Iron and Steel.—Buying is about on a par with what it was a year ago, although individual orders are small. Fabricators of structural steel are booking little business, but have considerable tonnage in prospect. The Wabash Railway is in the market for its second quarter requirements of plates, 200 tons; structural shapes, 125 tons, and bars, 75 tons.

Coke.—There still is a good demand for foundry and domestic grades. The extremely cold weather for this time of year has brought a steady stream of orders to by-product ovens in the district.

Old Material.—The market shows further weakness, and most grades of scrap are 25c. to 75c. lower than a week ago. An East Side consumer bought a fair tonnage of heavy melting and heavy shoveling steel at 25c. under the price on a previous purchase 30 days ago. Consumers insist that prices of old material are too high, and are waiting for the market to reach what they consider a proper level. Heavy railroad offerings also contribute to the weakness of the market. Lists offered this week total about 50,000 tons, including: Baltimore & Ohio, 25,300 tons; Atchison, Topeka & Santa Fe, 4400 tons; Terminal Railroad Association of St. Louis, 4200 tons; Rock Island Lines, 6600 tons; Southern Railway, 6200 tons; Chesapeake & Ohio, 6000 tons; Wabash Railway, 2500 tons; Pullman Co. (St. Louis), 500 tons, and Kansas City Southern, 370 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$13.00 to $13.50
Rails for rolling	15.50 to 16.00
Steel rails less than 3 ft	17.00 to 17.50
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	30.00 to 31.00
Cast iron car wheels	16.00 to 16.50
Heavy melting steel	13.00 to 13.50
Heavy shoveling steel	13.00 to 13.50
Frogs, switches and guards cut apart	14.75 to 15.25
Railroad springs	17.00 to 17.50
Heavy axle and tire turnings	9.00 to 9.50
No. 1 locomotive tires	16.75 to 17.25
Per Net Ton	
Steel angle bars	12.50 to 13.00
Steel car axles	17.75 to 18.25
Iron car axles	22.50 to 23.00
Wrought iron bars and transoms	18.50 to 19.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	11.50 to 12.00
Cast iron borings	9.00 to 9.50
No. 1 busheling	10.00 to 10.50
No. 1 railroad cast	14.00 to 14.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	13.50 to 14.00
Machine shop turnings	6.25 to 6.75
Bundled sheets	7.00 to 7.50

Warehouse Prices, f.o.b. St. Louis

Plates and structural shapes	3.35c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 28 black sheets	4.60c.
No. 10 blue annealed sheets	3.60c.
No. 28 galvanized sheets	5.70c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.75c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
	Per Cent Off List
Tank rivets, $\frac{7}{8}$-in. and smaller	70
Machine bolts	50 and 5
Carriage bolts	47½
Lag screws	55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

Cincinnati

Silvery Declines $2 a Ton—Heavy Melting Steel Drops 50c.

CINCINNATI, April 13.—The break in pig iron prices, which brought foundry grades in the Ironton district down to $20, base furnace, has failed to stimulate sales. Some buyers expect another downward revision of quotations and accordingly have postponed action. Furthermore, many melters have carried over from the first quarter enough iron to satisfy their requirements during the next two months. While orders in the past week have been confined to small lots and there has been little opportunity to test the Ironton price, developments indicate that No. 2 foundry has settled definitely to a level of $20, base Ironton. A sale of 300 tons to a Louisville, Ky., melter was made on that basis. Malleable iron also has weakened, with a central Ohio producer accepting $20, furnace, for 500 tons for a Springfield, Ohio, concern. Jackson County silvery furnaces have announced a reduction of $2 a ton on all grades of silvery and Bessemer ferrosilicon. The Hooven-Owens-Rentschler Co., Hamilton, Ohio, is understood to have purchased 600 tons of high manganese malleable iron from a Cleveland furnace at approximately $19, base, Cleveland. Alabama producers continue to ask $22, base, Birmingham, and are booking small tonnages at that figure. Tennessee iron is steady at $21.50, base, Birmingham. There are only a few active inquiries before the trade, and the market is expected to be quiet in the immediate future. A local broker has sold 250 tons of spiegeleisen. A Southern

steel company has purchased 200 tons of fluorspar at $17.50, f.o.b. Kentucky mines.

Based on freight rates of $3.69 from Birmingham and $1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$25.69
Alabama fdy., sil. 2.25 to 2.75	26.19
Tennessee fdy., sil. 1.75 to 2.25	25.19
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25	$21.89 to 22.39
So. Ohio malleable	21.89 to 22.39

Finished Material.—Although bookings have equaled those in the same period last month, the failure of specifications and orders to increase has caused disappointment. Demand is well distributed among a large variety of products, but the total tonnage has been only moderate in volume. Restriction of outdoor activities because of inclement weather has been a disturbing factor and has cut heavily into business. Consumers are accepting shipments on contract at a fairly satisfactory rate. On the other hand, jobbers are experiencing difficulty in moving their stock and consequently are buying sparsely. Bars are steady at 2c., base Pittsburgh, and plates are showing strength at 1.90c., base Pittsburgh. There has been only a limited call for structural shapes, which are steady at 1.90c., base Pittsburgh. Despite the fact that specifications and orders for sheets fell off considerably in the past week, prices do not reflect any signs of further weakness. Black sheets are available at 3.25c., base Pittsburgh, although several mills will not take less than 3.35c. Sales of galvanized sheets have been light, and quotations range from 4.50c. to 4.60c., base Pittsburgh. Blue annealed and automobile body sheets are firm at 2.50c. and 4.40c., base Pittsburgh, respectively. The Louisville & Nashville is inquiring for 450 tons of plates and sheets. One sheet producer in this territory operated at 80 per cent of capacity during the past week, while another mill averaged 75 per cent. There has been a better tone in the wire goods market. Independent mills in the Ironton district are holding to $2.65, base, per keg, Ironton, on common wire nails, and $2.50, base, per 100 lb., Ironton, on plain wire. Fabricators report that fresh inquiries are coming out slowly and present conditions make it necessary to operate on a restricted scale.

Rails.—The Cincinnati Street Railway Co. is inquiring for 600 tons of girder rails.

Reinforcing Bars.—Both awards and inquiries have been confined to small tonnages. Although there are a number of major projects proposed for the near future, none of them has assumed tangible form. New billet bars are quoted at 2c., base Cleveland, and rail steel bars at 1.90c., mill, although these prices have not been subjected to a real test in the past few weeks.

Warehouse Business.—Sales are running slightly ahead of those in March, but are far below normal for the spring season. Several jobbers are attempting to secure $3.05 per keg, f.o.b. local warehouse, for common wire nails, but at least one distributer has returned to the former price of $2.95 because of the refusal of an important competitor to advance his quotation. Prices on other products remain unchanged.

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.75c.
No. 28 black sheets	4.10c. to 4.30c.
No. 10 blue annealed sheets	3.60c.
No. 28 galvanized sheets	5.25c. to 5.40c.
Structural rivets	3.75c.
Small rivets	65 per cent off list
No. 9 annealed wire, per 100 lb.	$3.00
Common wire nails, base per keg	$2.95 to 3.05
Cement coated nails, base per 100-lb. keg	3.15
Chain, per 100 lb.	7.55

	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in.	$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.	19.00
4-in.	39.00

Coke.—Shipments of foundry coke in the first half of April have paralleled those of the same period in March. Cold weather in Michigan has resulted in a greatly increased demand from that State for by-product domestic coke. New River foundry grades, which are bringing $9.59 to $10.09, delivered Cincinnati, are moving at a moderate rate. Furnace coke from the Wise County district can be obtained for $3.25, ovens, while foundry grades from that district have declined 50c. a ton.

Based on freight rates of $2.14 from Ashland, Ky., $3.53 from Connellsville, and $2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, $7.53 to $9.53; Wise County foundry, $6.84 to $7.59; New River foundry, $9.59 to $10.09; by-product foundry, $10.14.

Old Material.—With mills taking only a small amount of material and with railroads offering large tonnages, the market is considerably weaker. Heavy melting steel has dropped 50c. to $1 a ton, and can be secured for $12 to $12.50. Cast iron grades have weakened perceptibly. Railroad lists which close this week include the Louisville & Nashville, 7000 tons, of which approximately 3500 tons are rails; the Southern, 5000 tons, and the Chesapeake & Ohio, 12,000 tons, of which 6000 tons are rails.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$12.00 to	$12.50
Scrap rails for melting	$12.50 to	13.00
Short rails	17.00 to	17.50
Relaying rails	27.00 to	27.50
Rails for rolling	13.50 to	14.00
Old car wheels	12.50 to	13.00
No. 1 locomotive tires	16.50 to	17.00
Railroad malleable	15.50 to	16.00
Agricultural malleable	14.00 to	14.50
Loose sheet clippings	7.50 to	8.00
Champion bundled sheets	9.50 to	10.00
Per Net Ton		
Cast iron borings	7.00 to	7.50
Machine shop turnings	6.50 to	7.00
No. 1 machinery cast	17.50 to	18.50
No. 1 railroad cast	14.00 to	14.50
Iron axles	20.50 to	21.00
No. 1 railroad wrought	9.00 to	9.50
Pipes and flues	7.50 to	8.00
No. 1 busheling	9.00 to	9.50
Mixed busheling	7.50 to	8.00
Burnt cast	7.50 to	8.00
Stove plate	9.00 to	9.50
Brake shoes	9.50 to	10.00

Boston

Holyoke Buys 5000 Tons of French Pipe —Plates Stronger

BOSTON, April 13.—Little change is noted in the pig iron situation. The supply of foreign iron, however, appears somewhat smaller, and most of the limited business transacted the past week was in domestic brands, largely of more or less special analyses. Western Pennsylvania iron was sold on a basis of $26.41, delivered, for No. 2 plain foundry grade, or 50c. a ton more than the delivered price on Buffalo iron. New York State iron, on the other hand, was sold on a basis of less than $25.91, delivered, for No. 2 plain, or the equivalent of $21, furnace, Buffalo. Two New York State furnaces are competing for business here. Alabama irons also have been moved at full asking prices. Eastern Pennsylvania furnaces are not much of a factor in the situation just now.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65 to	$26.15
East. Penn., sil. 2.25 to 2.75	26.15 to	26.65
Buffalo, sil. 1.75 to 2.25		25.91
Buffalo, sil. 2.25 to 2.75		26.41
Virginia, sil. 1.75 to 2.25		29.92
Virginia, sil. 2.25 to 2.75		30.42
Alabama, sil. 1.75 to 2.25	31.60 to	32.60
Alabama, sil. 2.25 to 2.75	32.10 to	33.10

Shapes and Plates.—Plates are no longer available at 1.80c. per lb., base Pittsburgh, and the market today is firm at 1.90c. For shapes the market holds well at 1.90c., with demand slightly more active. Fabricators, however, are not buying very far ahead, notwithstand-

ing the fact that deliveries are becoming somewhat extended. Numerous jobs requiring less than 100 tons each have been booked by local fabricators. Bids on the Boston Consolidated Gas Co. office building, taking some 1500 tons, the largest business in the market at the moment, closed April 12.

Cast Iron Pipe.—After considerable delay, Holyoke, Mass., has awarded 5000 tons of 20-in. pipe to B. Nicoll & Co., Inc., New York. This is one of the largest contracts made with French pipe interests in New England and one of the most desirable pieces of business available this year. The contract price is $224,000, or $14,000 less than the next lowest bid. Quincy, Mass., has awarded 3805 tons of 6-in. to 20-in. pipe to the United States Cast Iron Pipe & Foundry Co. The Warren Foundry & Pipe Co. was the low bidder for the 1926 pipe requirements of Everett, Mass., no specific tonnage being named. R. D. Wood & Co. has been awarded 100 tons of 6-in. to 12-in. pipe by Cambridge, Mass. Lowell, Mass., awarded about 100 tons of 12-in. pipe to the Lowell Iron & Steel Co. Bedford, Mass., will soon be in the market for 100 tons of 8-in. pipe. Prices on small pipe are firm, while those for large are subject to concessions. Prices quoted openly on domestic pipe are: 4-in., $60.10 a ton, delivered common Boston freight rate points; 6-in. and larger, $55.10. The usual $5 differential is asked on Class A and gas pipe.

Coke.—New England foundries are specifying more freely against first half by-product foundry coke contracts. The movement of fuel from New England ovens the first half of April ran considerably ahead of that for the corresponding period of March. The New England Coal & Coke Co. and the Providence Gas Co. are doing business on a basis of $12.50 a ton, delivered, within a $3.10 freight rate zone. Connellsville foundry coke is still available at about $1.65 a ton under New England-made fuel.

Warehouse Business.—The movement of material out of warehouse is somewhat larger than it was the first of the month; yet business is far from active. The average consumer is buying in small lots, but often. Independent warehouses have a well balanced stock, but are buying from mills in a hand-to-mouth way. Warehouse prices generally are firm and unchanged.

Old Material.—Activity centers largely in heavy melting steel, pipe, borings, turnings and skeleton. Prices on all grades except skeleton are easier. The extreme range of prices on heavy melting steel is from $10.85 to $11.50 a ton, on cars, which is somewhat narrower than in previous weeks, and the spread in other materials is much less pronounced. This contraction is attributed to losses sustained on rejections. Rejections by a plant at Worcester, Mass., are reported as unusually numerous. That company is credited with having a large forward supply of steel billets on hand. Pittsburgh also is rejecting shipments of heavy melting steel, but little complaint is heard from eastern Pennsylvania. Chemical borings are difficult to move, as users have withdrawn from the market. Machinery cast shows little life. A majority of New England melters are still able to pick up material at prices under those quoted in this market from nearby yards.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	$19.25 to $19.75
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	14.50 to 15.50
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.85 to $11.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	10.60 to 11.25
Machine shop turnings	8.75 to 9.00
Cast iron borings, chemical	11.00 to 11.50
Cast iron borings, rolling mill	8.75 to 9.00
Blast furnace borings and turnings	8.25 to 8.50
Forged scrap	9.00 to 10.00
Bundled skeleton, long	9.00 to 10.00
Forged flashings	9.00 to 10.00
Bundled cotton ties, long	8.75 to 9.25
Bundled cotton ties, short	9.50 to 10.00
Shafting	16.75 to 17.00
Street car axles	16.50 to 17.00
Rails for rerolling	12.50 to 13.00
Scrap rails	11.00 to 11.50

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flats, hot rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Wayne	5.50c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees and zees	3.415c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.615c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	3.95c.
Squares and flats	4.45c.
Toe calk steel	6.00c.

Buffalo

Pig Iron Prices Unchanged Under Light Demand—Mills on 80 Per Cent Basis

BUFFALO, April 13.—The reductions in pig iron in the Valley had an effect on the local market, but not sufficient to weaken prices, so far as is known. Sales have been uniformly small during the week, and not a single large inquiry has appeared. Statistics of operations show the following furnaces in blast: Bethlehem's Lackawanna plant, six; Rogers-Brown Iron Co., three; Donner Steel Co., two; Hanna Furnace Co., two; Wickwire Spencer Steel Co., one, and Tonawanda Iron Co., one, or 71 per cent of the blast furnace capacity of this district.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdry., sil. 1.75 to 2.25	$21.00
No. 2X foundry, sil. 2.25 to 2.75	21.50
No. 1X foundry, sil. 2.75 to 3.25	22.50
Malleable, sil. up to 2.25	21.00
Basic	$20.50 to 21.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Local warehouses report the quarter just completed the best of any since 1923. The disposition is to think that the first half of this year will be better than the last half. The warehouses report a good volume of orders and a satisfactory distribution. The plate market is better than it has been for some time, and spot demand for sheets has picked up. Demand for structural shapes is beginning to improve. Wire mills are busy and report satisfactory business with prices holding firm. The wire demand covers all lines. General mill operations, including those of plants making sheets, bars, wire and shapes, are at about 80 per cent of capacity.

Old Material.—Buying has fallen off, and production of scrap is lighter. It is difficult to pick up a tonnage at present prices. A small tonnage of heavy melting steel was bought by a local mill at $16.50, and another small tonnage brought $16.75. This was strictly No. 1 heavy melting steel. Steel of slightly broader specifications commands $15.75 to $16, which is what any mill seeking a tonnage of this grade would probably have to pay. Railroad malleable is in brisk demand, with four or five consumers in the local district seeking it, and one or two outside. As high as $22.50 has been

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 28 black sheets	4.60c.
No. 10 blue annealed sheets	3.90c.
No. 28 galvanized sheets	5.75c.
Common wire nails, base per keg	$3.90
Black wire, base per 100 lb.	3.90

paid for this grade. Demand for stove plate has died down, and there is little inquiry for turnings.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$15.50 to $16.50
Low phosphorus	18.00 to 18.50
No. 1 railroad wrought	14.00 to 14.50
Car wheels	17.00 to 17.50
Machine shop turnings	11.00 to 11.50
Mixed borings and turnings	12.50 to 13.00
Cast iron borings	12.50 to 13.00
No. 1 busheling	14.00 to 14.50
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Hand-bundled sheets	11.00 to 11.50
Hydraulic compressed	14.50 to 15.00
No. 1 machinery cast	17.00 to 17.50
Railroad malleable	21.00 to 22.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50

Seattle

Look for Good Steel Buying in April and May

SEATTLE, April 9.—Local managers of sales of Eastern steel companies, and also local jobbers, report that March was a good month in every way, new tonnage taken being larger than in either of the two previous months, while one local jobber states that March business in sales of steel products was the largest in any month in its history. The outlook is regarded as very satisfactory, and April and May are expected to be good months. With the arrival of June, trade is expected to quiet down as it usually does with the start of summer.

Pig Iron.—Foundries are buying practically no iron. German iron is being offered here at about $21.50, c.i.f., or lower. The Utah interest is still quoting around $26, Seattle, for foundry grades.

Finished Steel.—The United States Steel Products Co. has sold 1000 tons of 80-lb. rails to the Peninsular Railroad, a logging road. The local steel bar market has been disturbed by recent importations of German bars, and other lots are under negotiation. Wire products are quiet. The Columbia Steel Corporation is quoting wire nails at $3.25, base, for carloads of 80,000 lb. minimum, and $3.40 on car loads of 40,000 lb. minimum.

Warehouse Prices, f.o.b. Seattle

	Base per Lb.
Plates	3.25c.
Structural material	3.35c.
Steel bars	2.35c.
Reinforcing bars	3.25c.
No. 10 blue annealed sheets	4.50c.
No. 28 black sheets	5.50c.
No. 28 galvanized sheets	6.50c.
Floor plates	5.75c.
Common wire nails, base per keg	$3.25
	Per Cent Off List
Rivets, tank	50
Bolts, carriage, all sizes	40
Bolts, machine	45

Old Material.—The local market is quiet and prices have gone off to some extent. We quote heavy melting steel at $11.50 per gross ton; cast iron scrap at $15.50 per net ton; miscellaneous and country scrap, $8.50 per net ton; old steel rails, $13.50 to $14 per gross ton for 5-ft. and longer lengths, and railroad axles $14.50 per net ton, all these prices being f.o.b. at yards, freight added to point of delivery.

March Machine Tool Orders 25 Per Cent Ahead of February

CINCINNATI, April 13.—The index of net machine tool orders for March stands at 177.9, as compared with 142.1 in February, according to the monthly report of the National Machine Tool Builders' Association. The three months' average of gross orders rose from 151 in February to 158 in March. However, signs indicate a recession in machine tool business, but that it is not likely to reach the proportions of a serious depression and to go as low as in 1924.

FABRICATED STEEL

Structural Awards More Than 28,000 Tons and Inquiries Call for 21,000 Tons

The largest structural steel award in a week's total of more than 28,000 tons was 6000 tons for a pipe line for San Diego, Cal. About 21,000 tons of work has come up for bids.

TAUNTON, MASS., 900 tons, 1,500,000-cu. ft. gas holder for Taunton Gas & Light Co., to Stacey Mfg. Co.

NEW YORK, 3500 tons, viaduct for New York Central Railroad, to Bethlehem Steel Corporation.

NEW YORK, 400 tons, addition to Gimbel Brothers department store, to Hedden Iron Construction Co.

NEW YORK, 175 tons, addition to Plaza Hotel, Fifth Avenue at Fifty-ninth Street, to Easton Structural Steel Co.

NEW YORK, 100 tons, addition to building at 2 Rector Street, to American Bridge Co.

NEW YORK, 350 tons, office building at 13-15 East Forty-first Street, to Hinkle Iron Works.

NEW YORK, 950 tons, apartment building at 950 Fifth Avenue, to Easton Structural Steel Co.

BROOKLYN, 100 tons, St. Francis Xavier School, President Street, to Alpine Iron Works.

BROOKLYN, 125 tons, stable for 101st Cavalry Armory, to Kues Brothers, Inc.

BROOKLYN, 265 tons, Olympic Theater at Adams and Fulton Streets, to Dreier Iron Works.

QUEENS, L. I., 800 tons, bridge for Long Island Railroad, to Bethlehem Steel Corporation.

ERIE RAILROAD, 200 tons, bridge, to American Bridge Co.

TRENTON, N. J., 250 tons, New Jersey State Hospital addition, to American Bridge Co.

PHILADELPHIA, 1000 tons, building No. 8 for Sesqui-Centennial Exposition, to Austin Co.

HARRISON, N. J., 125 tons, car shop extension, Otis Elevator Co., to Jones & Laughlin Steel Corporation.

NEW YORK CENTRAL LINES, 225 tons, for bridge rebuilding at Genessee Junction, N. Y., to Jones & Laughlin Steel Corporation.

PENNSYLVANIA, 1800 tons, temporary viaduct for Conowingo power project in southern section of State, to McClintic-Marshall Co.

BALTIMORE & OHIO RAILROAD, 800 tons, two bridges, to Mount Vernon Bridge Co.

SOUTHERN RAILWAY, 200 tons, bridge, to Virginia Bridge & Iron Co.

MIAMI, FLA., 2000 tons, Ingraham office building, to Virginia Bridge & Iron Co.

ATLANTA, GA., 1500 tons, Sears, Roebuck & Co., to Virginia Bridge & Iron Co.

PITTSBURGH, 760 tons, six river barges for Pittsburgh Steel Co., to Riter-Conley Co.

JOHNSTOWN, PA., 300 tons, National Radiator Co., foundry extensions, to Austin Co.

PHILADELPHIA, 250 tons, Concordia Silk Hosiery Co., factory, to McClintic-Marshall Co.

ATLANTIC CITY, N. J., 175 tons, garage, to Bethlehem Steel Corporation.

PENNSYLVANIA, 100 tons, bridge over the Little Schuylkill River, to Bethlehem Steel Corporation.

CINCINNATI, 2184 tons, eight river barges for Barrett Line, Inc., to American Bridge Co.

FOSTORIA, OHIO, 120 tons, Seneca Wire & Mfg. Co., to American Bridge Co.

DAYTON, OHIO, 175 tons, building for Rudolph Wurlitzer Co., to Dayton Structural Steel Co.

SHEFFIELD, ALA., 320 tons, King Mfg. Co., foundry, to St. Louis Structural Steel Co.

MARQUETTE, MICH., banking house, 140 tons, to Lakeside Bridge & Steel Co.

SAN DIEGO, CAL., 6000 tons, 17 miles of pipe line for the city of San Diego, to Western Pipe & Steel Co., about 2000 tons additional is still pending.

TAFT, CAL., 630 tons, pipe line, Western Water Co., to Steel Tank & Pipe Co., Berkeley, Cal.

WASHINGTON, 100 tons, bridge across Little Pilchuck River, to Hoflus Steel & Equipment Co.

SPOKANE, WASH., 320 tons, pipe line, to Steel Tank & Pipe Co.

CROCKETT, CAL., 430 tons, high school, to Moore Dry Dock Co.

BERKELEY, CAL., 100 tons, traction terminal, Shattuck and University Avenues, to Pacific Coast Engineering Co., Oakland.

SAN FRANCISCO, 130 tons, apartment, Jones and Geary Streets, to Central Iron Works.
LOS ANGELES, 300 tons, highway bridge over Rio Hondo, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

BOSTON, 700 tons, Home for Incurables.
WALPOLE, MASS., 350 tons, warehouse, Bird & Sons.
NEW HAVEN, CONN., 900 tons, athletic arena.
CAMDEN, N. J., 500 tons, manufacturing plant for insulating board.
QUEENS, L. I., 200 tons, warehouse.
LATROBE, PA., 150 tons, bank and office building for Peoples National Bank.
PITTSBURGH, 250 tons, Allegheny branch Y. M. C. A.
PHILADELPHIA, 3000 tons, City Hall Annex; plans soon to be sent out.
PHILADELPHIA, 700 tons, buildings Nos. 9, 10 and 11 for the General Electric Co. plant.
PHILADELPHIA, 800 tons, Medico-Chirurgical Building at University of Pennsylvania.
EDDYSTONE, PA., 1000 tons, two buildings for the Baldwin Locomotive Works; former bids rejected.
WILKINSBURG, PA., 300 tons, Penn-Lincoln Hotel.
CRAFTON, PA., 200 tons, dormitory for St. Paul's Orphan Asylum.
MCKEES ROCKS, PA., 100 tons, First National Bank Building.
LOUISVILLE, HENDERSON & ST. LOUIS RAILROAD, 1000 tons, bridge over Green River in Kentucky.
COLUMBUS, OHIO, 165 tons, building at Ohio State Fair Grounds.
COLUMBUS, OHIO, 145 tons, office building.
COLUMBUS, OHIO, 800 tons, bridge for Pennsylvania Railroad.
MOBILE, ALA., 600 tons, cotton warehouse; bids in.
CHICAGO, 1000 tons, McCormick Hotel.
CHICAGO, 3000 tons, Chatelaine Tower.
SPRINGFIELD, ILL., 720 tons, Illinois Highway Commission, bridge work in Menard County, St. Louis Structural Steel Co. low bidder.
ST. LOUIS, 750 tons, St. Louis Car Co., addition.
YAKIMA, WASH., 2750 tons structural material, 190 tons of bars, irrigation project; bids opened April 29.
SAN FRANCISCO, 450 tons, 8 highway bridges for United States Department of Agriculture to be erected in California, Idaho, Montana and Arizona; bids opened April 20 by deputy chief engineer, Bureau of Roads, 9 Main Street.
OAKLAND, CAL., 350 tons, Frick School; bids May 4.
OROVILLE, CAL., 125 tons, pipe line, Thermalito Irrigation District; bids opened April 19.

RAILROAD EQUIPMENT

Pennsylvania Orders 2000 Box and 234 Passenger Cars—Burlington Buys 500 Freight Cars

The Pennsylvania Railroad has placed orders for the 2000 automobile box cars and 234 passenger and baggage cars, for which it inquired some weeks ago. The only other car buying of importance was an order for 500 hopper cars placed by the Chicago, Burlington & Quincy. The items follow in detail:

The Pennsylvania Railroad has placed orders for 2000 automobile box cars and 234 units of passenger equipment, the orders being divided as follows: Of the automobile cars, 600 will be built by the Bethlehem Steel Corporation, 400 by the Pressed Steel Car Co. and 500 each by the American Car & Foundry Co. and Ralston Steel Car Co. Of the passenger equipment, 100 baggage cars will be built by the American Car & Foundry Co., 35 coaches by the Pressed Steel Car Co., 22 coaches and 20 electric-train cars by the Standard Steel Car Co., 32 passenger-train cars by the Pullman Car & Mfg. Corporation, and 25 passenger cars are also reported to have been awarded to the St. Louis Car Co.

The Chicago, Burlington & Quincy Railroad has ordered 500 hopper cars from the American Car & Foundry Co.

The Transportation Division, Department of Commerce, Washington, has been informed by the American representative in Egypt that the Egyptian State Railways Administration has decided to call for tenders in accordance with former specifications for 600 10-ton steel box trucks, with modifications. The previous bids were canceled. Bids will be received at the general manager's office, Cairo, up to 10 a. m. on May 6. Offers are required for the supply of 500 10-ton steel box trucks and no offers for a lesser quantity will be considered. Delivery must be completed within 20 days from date of the letter intimating acceptance of the tender.

REINFORCING STEEL

Awards Exceed 10,000 Tons and Pending Projects Total About 1300 Tons

The week's awards of concrete reinforcing bars totaled more than 10,000 tons, the largest being 2030 tons for a municipal project at Oakland, Cal. The National Press Club Building, Washington, will take 1200 tons, with the prospect that 500 to 1000 tons additional may be required. Awards follow:

NEW YORK, 680 tons, Intervale sewers, the Bronx, to Kalman Steel Co.
NEW YORK, 800 tons, Hunt's Point plant, Consolidated Gas Co., 163d Street and East River, to McClintic-Marshall Co., in addition to 200 tons previously placed.
JERSEY CITY, N. J., 100 tons, Salvation Army building, to Joseph T. Ryerson & Son.
ALBANY, N. Y., 300 tons, State Highway Commission, for road work, to Concrete Steel Co.
WASHINGTON, 1200 tons, with 500 to 1000 additional in prospect, National Press Club Building, to Concrete Steel Co.
WASHINGTON, 600 tons, Chesapeake & Potomac Telephone Co. building, to an unnamed company.
CHICAGO, 250 tons rail steel, Surf Apartment building, to Olney J. Dean & Co.
CHICAGO, 175 tons, Brach Candy Co., to Olney J. Dean & Co.
CHICAGO, 110 tons rail steel, Winthrop Building Corporation, to Calumet Steel Co.
CHICAGO, 215 tons, University of Chicago Stadium, to Joseph T. Ryerson & Son.
CHICAGO, 110 tons, Phillip State Bank, to Barton Spiderweb System, Inc.
CHICAGO, 120 tons of rail steel, Eitel Building, to Inland Steel Co.
CHICAGO, 140 tons rail steel, St. James Hospital, to Calumet Steel Co.
CHICAGO, 200 tons rail steel, Antone Hotel, to Inland Steel Co.
CHICAGO, 250 tons, John V. Barwell & Co., to Joseph T. Ryerson & Son.
CHICAGO, 100 tons, Roanoke Building, to Concrete Steel Co.
CHICAGO, 105 tons, Empire Warehouse Co., to Concrete Engineering Co.
GARY, IND., 120 tons, addition to public schools, to Kalman Steel Co.
TENNESSEE, 150 tons, highway paving, to Concrete Steel Co.
GRAND RAPIDS, MICH., 300 tons, Grand Rapids Storage & Van Co., to Concrete Steel Co.
RIVER FOREST, ILL., 115 tons, Trinity High School, to Concrete Engineering Co.
MILWAUKEE, 220 tons rail steel, Milwaukee Storage Co., to Calumet Steel Co.
ST. LOUIS, 150 tons, apartment house, Newstead Avenue and West Pine Boulevard, to Laclede Steel Co.
JEFFERSON CITY, MO., Missouri Highway Commission, 220 tons, Pike County highways, to Kalman Steel Co.
OAKLAND, CAL., 2030 tons, East Bay municipal utility district, to Columbia Steel Corporation, San Francisco.
SAN FRANCISCO, 600 tons, United States Naval hospitals on Mare Island, to Barrett & Hilp.
SAN FRANCISCO, 600 tons, addition to St. Mary's Hospital, to Barrett & Hilp.
SAN FRANCISCO, 240 tons, Edison School, to unnamed local jobber.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BROOKLYN, 130 tons, Hilo Varnish Co. plant.
CLEVELAND, 125 tons, Engineering Building, Case School of Applied Science.
JACKSONVILLE, FLA., 700 tons, San Jose-Vanderbilt Hotel; general contract awarded to Bentley Brothers, Toledo, Ohio.
EVANSTON, ILL., 1200 tons, Northwestern University Stadium; contractor, J. B. French.
GARY, IND., 150 tons, Knights of Columbus Building; H. G. Christman, South Bend, Ind., general contractor.
CHICAGO, 300 tons, LaSalle Street bridge footings; general contract awarded to Central Dredging Co.
CHICAGO, 300 tons, addition to Tribune Building; general contractor, R. C. Wieboldt.
CHICAGO, 810 tons, Sheridan-Aldine Hotel; Rissman & Herschfield, architects.
CHICAGO, tonnage unstated, Chatelaine Tower; Ray French, architect.

DISCUSS STEEL MAKING

Some of Topics Considered at Meeting in Chicago of Open-Hearth Superintendents

CHICAGO, April 13.—Thirty-nine open-hearth superintendents and others met yesterday in the Congress Hotel to discuss problems vital to making good steel at reasonable cost. The three day meeting includes two days of papers and discussions. Wednesday will be devoted to visits to the South Works of the Illinois Steel Co., the Wisconsin Steel Co. and Inland Steel Co.

Monday's two sessions were occupied with two papers, one by K. Huessener, American Heat Economy Bureau, Inc., Pittsburgh, "Combustion in Open-Hearth Furnaces with Special Reference to Automatic Control," and the other by Carl W. Peirce, Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, on "Rimmed Steel." Both papers were read in New York in February before the American Institute of Mining and Metallurgical Engineers, under whose auspices present meeting is held, although only one man in five here is a member.

Discussion was vigorous and searching in each case, one paper occupying the entire morning and the other the entire afternoon. Mr. Huessener pointed out the narrow range of temperature available for open-hearth operation as between 3000 deg. Fahr., below which heat transfer to the bath is inadequate, and 3300 deg., above which the roof suffers. He stated that 85 to 90 per cent of the heat going into the bath is by radiation. He advocated no preheat for producer gas. For fuel economy he urged running the furnace as fast as possible.

Large dead areas in regenerators were charged with inefficiency in heat transfer. Only 40 per cent of the area really is working. With better control and with a uniform combustion rate, he reported over 400 heats where previously 250 was considered good for a roof.

James J. Bowden, Laclede Steel Co., Alton, Ill., advocated auxiliary regenerators to reduce stack temperatures from 1250 to 80 deg. Sulphur trouble from by-product coke gas was reported due to high sulphur coal. This required desulphurizing when above 4 lb. per 10 000 cu. ft.

G. D. Tranter, American Rolling Mill Co., Middletown, Ohio, chairman of the superintendents' committee, read a report on the subject matter for future meetings. Cut and try methods have given place to costly experimental work and secrecy to free interchange of information and ideas. Conservation of fuel, refractories, proper raw materials, greater thermal efficiency through temperature control and shapes of bricks and of regenerators were suggested.

In the absence of Mr. Peirce, his paper was read by Mr. Bowden. An abstract appeared in THE IRON AGE of Feb. 25. R. L. Leventry, Republic Iron & Steel Co., Youngstown, Ohio, brought up mold wall thickness as a factor and told of planing down the sides of a mold in sheet bar making for deep drawing sheets. No advantage was traced to this nor to sand cast ingots, but he believes thin walls are better than thick.

Mold wash of graphite was advocated by several speakers as preventing adherence of splash on the mold walls. No difference was found between top and bottom pours. Manganese content was discussed because Mr. Peirce advocated 0.30 per cent as maximum for rimming steel. Nearly all regarded 0.40 to 0.50 better, except for carbon above 0.11 per cent.

Mold practice was covered, several speakers showing from 85 to 130 heats per mold and one reaching 135. This figured out at 28 to 36 lb. of mold plus stool per ton of ingots. Direct iron molds were regarded superior to those from cupola metal. One speaker stated that square molds were more durable than oblong ones.

Blisters and bleeding ingots were traced to several sources. Thin ingot walls with too rapid pouring were charged with responsibility for bleeding between skin and mold.

Tuesday's sessions were occupied with papers on elimination of metalloids, in the morning, and refractories, in the afternoon.

The elimination of metalloids in open-hearth furnaces was discussed Tuesday morning. Special stress was laid on the use of high manganese pig iron in reducing sulphur. This practice was recommended by the general opinion of members present.

The effect of open-hearth practice on refractories and accuracy of optical pyrometer readings were discussed at the afternoon session.

E. A. Whitworth, Gathmann Engineering Co., was unanimously reelected chairman of the conference.

G. D. Tranter was made chairman of the superintendents' committee; James J. Bowden, of the practice and yield committee; C. B. Collingwood, of the furnace design committee, and G. A. Bole, of the refractories committee.

Canadian Iron Ore Output Small But Newfoundland Production Is Heavy

TORONTO, ONT., April 13.—Iron ore shipments from Canadian mines during the year 1925 were practically negligible, says the preliminary report of mineral production of Canada, just issued by the Department of Trade and Commerce, Ottawa, Canada. A small quantity of ilmenite, amounting to 3987 tons, was shipped from Baie St. Paul, Que., to Niagara Falls, N. Y., and Lynn, Mass. Considerable research work is being done on the ilmenite ores of Quebec by the research laboratories of the Department of Trade and Commerce, with a view to making an economic recovery of both the titanium and the iron.

Production of pig iron from Canadian ores in Canada during 1925 amounted to 3400 tons. Wabana (Newfoundland) ore shipments, while not included in the record of the mineral production of Canada, are of interest because of their connection with the British Empire Steel Corporation and its plants in Nova Scotia. During the year under review shipments from Wabana mines totaled 1,267,851 net tons. Of this amount 883,056 tons was exported to Europe and the remainder, or 384,795 tons, to Canada.

Both Newfoundland and the British Empire Steel Corporation will reap immediate benefits from a new iron ore agreement ratified by the House at St. John's. The company undertakes to expend $750,000 at Wabana before 1931, and in return is freed from export taxes on ore for three years, after which the duty is to be 10c. per ton up to 1,000,000 tons, 5c. a ton on the next million, and free above that amount for the period from 1929 to 1950. On such portions of the first million tons as are shipped to points within the Empire, a rebate of 5c. per ton will be allowed. The company is also granted exemption from income taxes, exemption from local taxation above $10,000,000, and free entry of explosives and mining equipment.

Steel Fabricators' Meeting in Los Angeles

LOS ANGELES, April 5.—The Southern California Division of the American Institute of Steel Construction held its annual meeting April 1. The National Iron Works and the Standard Iron Works, both steel fabricating institutions of San Diego, Cal., joined the institute, which now has a 100 per cent membership list among steel fabricators in the territory.

On Tuesday, March 30, a visit was made to the works of the Los Angeles fabricators. The party was guided by Robert T. Miller, president of the California institute. The plants visited were: Union Iron Works, the Llewellyn, Baker, McClintic-Marshall, Brombacher, Lowith, Freedman, Prairie and the Lacy plants. At every shop L. H. Miller, chief engineer of the institute, made a brief talk to shop superintendents, erectors and other classes of employees on Eastern shop and factory practice.

NON-FERROUS METAL MARKETS

The Week's Prices

Cents per Pound for Early Delivery

	Apr. 7	Apr. 8	Apr. 9	Apr. 10	Apr. 12	Apr. 13
Lake copper, New York	14.12½	14.12½	14.00	14.00	14.00	14.00
Electrolytic copper, N. Y.*	13.75	13.67½	13.62½	13.62½	13.62½	13.62½
Straits tin, spot, New York	63.25	62.25	62.25	....	63.00	63.75
Lead, New York	8.00	8.00	8.00	8.00	8.00	8.00
Lead, St. Louis	7.65	7.65	7.65	7.65	7.65	7.65
Zinc, New York	7.35	7.35	7.35	7.35	7.40	7.50
Zinc, St. Louis	7.00	7.00	7.00	7.00	7.05	7.15

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, April 13.—The markets are all very quiet with the price tendency downward. Copper buying has been light with prices slightly lower. There has been a fair demand for tin at lower levels. The lead market has again declined but demand is fairly good. In zinc a new low level was registered this week, followed by considerable inquiry.

Copper.—The statistics for March were made public today and were decidedly favorable to sellers. The features were the large deliveries into consumption and the large reduction in stocks. Although the March rate of production was about the same as that of February, shipments to consumers were 18,000 tons larger and deliveries for export were 9000 tons in excess of February totals, with stocks of refined metal reduced from 86,000 tons to 75,000 tons, or a net decline of 11,000 tons. There was a slight increase in the amount of copper in the blister condition. The market during the week has been largely a waiting one, with quotations sagging gently to 13.87½c., delivered, for electrolytic copper. Today after the publication of statistics considerable inquiry and some buying developed with most producers asking 14c., delivered. There was still one seller, however, who was willing to do business at 13.87½c., at the close of the day, so that the market is quotable at 13.87½c. to 14c., delivered. It is believed by many that the turning point on this movement has been reached and that considerable buying at higher prices will develop. Lake copper is quoted at 14c., delivered.

Tin.—Thursday, April 8, was the most active day in the past week, sales totaling 500 to 700 tons. Consumers were the largest buyers with deliveries extending from April to July. Other days of the week have been quieter, sales on April 6 amounting to about 100 tons, on April 7 to about 150 tons and on April 9 to about 100 tons. Sentiment is bearish on future positions but spot metal both here and in London is scarce and high, as is clearly indicated by the London quotations of today which were: Spot standard, £284 5s.; future standard, £270 5s., and spot Straits, £289 5s. There is a spread of £14 and £19 for both spot standard and spot Straits, respectively, over future standard. The Singapore price today was £277. London prices today were about £4 5s. higher than yesterday on spot positions, and about £1 5s. a ton higher than futures yesterday. The market had been declining and was quite weak up to yesterday. Spot Straits tin today in New York was quoted at 63.75c. Arrivals thus far this month have been 2285 tons, with 5445 tons reported afloat.

Lead.—The leading interest reduced its quotation on April 7 from 8.20c. to 8c., New York, and the outside market was not slow to follow the lead downward. In that market lead today is quoted at 7.60c. to 7.70c., St. Louis, or 7.95c. to 8.05c., New York. The market is quiet with the April output practically sold up and the May production pretty well disposed of.

Zinc.—Statistics for March appeared yesterday and showed very high domestic shipments, constituting a record, with an increase in production and a slight increase in stocks. Their character was something of a surprise. The expected curtailment in production had not apparently taken place. The domestic deliveries were 473 tons more than the highest previous volume in January, this year, and were 5583 tons more than deliveries in February. One interpretation is that either galvanizers have heavy stocks or their operations have been on a larger scale than estimated. The immediate effect of the statistics has been bullish and prices today are higher than the low point of the week of 7c., St. Louis. Prime Western zinc for early delivery is quoted at 7.15c., St. Louis, or 7.50c., New York.

Nickel.—Wholesale lots of ingot nickel are quoted at 35c. with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

Warehouse Business.—Jobbers of non-ferrous metals report a fair volume of business, but prices of tin, zinc, lead and antimony have declined in the past week, sell-

Metals from New York Warehouse

Delivered Prices Per Lb.

Tin, Straits pig	63.50c. to 64.25c.
Tin, bar	69.25c. to 69.75c.
Copper Lake	15.50c.
Copper, electrolytic	15.25c.
Copper, casting	15.00c.
Zinc, slab	8.50c. to 9.00c.
Lead, American pig	9.00c. to 10.00c.
Lead, bar	11.25c. to 12.25c.
Antimony, Asiatic	20.00c. to 21.00c.
Aluminum, No. 1 ingots for remelting (guaranteed over 99 per cent pure)	30.00c. to 30.50c.
Babbitt metal, commercial grade	30.00c. to 35.00c.
Solder, ½ and ½ guaranteed	41.00c.

Rolled Metals from New York Warehouse

Delivered Prices, Base Per Lb.

Sheets—	
High brass	18⅞c. to 19⅞c.
Copper, hot rolled	22½c. to 23½c.
Copper, cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.	
Zinc (No. 9), casks, 13.25c.; open	13.75c.
Seamless Tubes—	
Brass	23½c. to 24½c.
Copper	24¼c. to 25¼c.
Brazed Brass Tubes	26⅞c. to 27⅞c.
Brass Rods	16⅝c. to 17⅝c.

Non-Ferrous Rolled Products

Mill prices in brass, bronze and copper products are unchanged from those prevailing since March 26 except on copper wire which has been reduced ¼c. per lb. Zinc and lead sheets remain unchanged since the reductions made three weeks ago.

List Prices Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight Up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets	
High brass	18.87½c.
Copper, hot rolled	22.50c.
Zinc	11.75c.
Lead (full sheets)	11.75c.
Seamless Tubes	
High brass	23.50c.
Copper	24.25c.
Rods	
High brass	16.62½c.
Naval brass	19.37½c.
Wire	
Copper	15.75c.
High brass	19.37½c.
Copper in Rolls	21.37½c.
Brazed Brass Tubing	26.87½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

ers from stock adjusting their quotations to reductions in the wholesale market.

Antimony.—Chinese metal for spot and early delivery in a quiet market is again lower at 17c. to 17.50c., New York, duty paid, for spot and early delivery, with May arrival at 15.50c. to 16c. These quotations are largely nominal.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is obtainable as ingots at 27c. to 28c., delivered.

CHICAGO, APRIL 13.—All commodities listed are now quoted below the prices prevailing last week. The copper market is unusually quiet, and zinc, now quoted at 7.10c., shows a strong tendency to be firm at that figure. The leading producer of lead has revised quotations downward in a quiet market. The antimony market has been fairly steady, but shipments received are said to be greatly in excess of the immediate demand. There is practically no demand for old metals and prices remain unchanged. We quote, in carload lots: Lake copper, 14c.; tin, 63.50c.; lead, 7.75c.; zinc, 7.10c.; in less than carload lots, antimony, 20c. On old metals we quote copper wire, crucible shapes and copper clips, 10.25c.; copper bottoms, 9.25c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 6.50c.; zinc, 5c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; aluminum, 19.50c.; all being dealers' prices for less than carload lots.

Old Metals, Per Lb., f.o.b. New York

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.75c.	13.25c.
Copper, heavy and wire	11.50c.	12.75c.
Copper, light and bottoms	9.50c.	11.00c.
Brass, heavy	7.00c.	9.00c.
Brass, light	6.25c.	7.75c.
Heavy machine composition	8.75c.	10.00c.
No. 1 yellow brass turnings	8.25c.	9.00c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	6.50c.	7.00c.
Lead, tea	5.00c.	6.00c.
Zinc	4.00c.	4.75c.
Cast aluminum	18.00c.	19.50c.
Sheet aluminum	18.00c.	19.50c.

OBITUARY

JOHN JOSEPH CHARLES, president of Hibbard, Spencer, Bartlett & Co., Chicago, died at Pasadena, Cal., April 6. He was born in Williamsport, Md., in 1856, and was educated in the public schools and at Racine College, Racine, Wis. His first employment, after coming to Chicago, was with J. V. Farwell & Co. Later he accepted employment with the Pullman Car Co., and in 1873, when 17 years of age, he entered the employ of the hardware firm, then known as Hibbard & Spencer. At first he served as a salesman and buyer and later was made a director of the company. In 1911 he was elected second vice-president and in 1916 was made president, the position he held at the time of his death. Mr. Charles gave much of his time to civic and public affairs and was an enthusiastic golfer, being a member of the Evanston and Glenview Golf Clubs, as well as the Chicago Athletic Association and the Evanston Club.

JOHN J. CHARLES

ROBERT PINOT, vice-president Comité des Forges de France, died suddenly on Feb. 24. Mr. Pinot was a graduate of the School of Mines, Paris, and had served for 27 years with the Comité des Forges. Well known in international iron and steel circles, he had often represented French industries in negotiations with committees from other countries. He was general delegate of the Union of Mining and Metallurgical Industries of France and was active in welfare work, particularly with regard to the iron and steel workers in the several organizations forming the Comité des Forges. He was a member of the board of directors of the International Labor Bureau of the League of Nations and was vice-president of the French National Economic Council.

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PROF. GEORG KLINGENBERG, noted electrical engineer and a privy councillor in Germany, died at Berlin on Dec. 7, 1925. Professor Klingenberg was born at Hamburg on Nov. 28, 1870. In 1902 he was appointed a member of the board of the German General Electric Co. Between 1907 and 1914 he was consulting engineer upon some of the great projects of this concern. He made numerous researches resulting in the improved efficiency of steam plants, and also contributed much to the development of internal combustion engines. In 1921 he was elected president of the Verein Deutscher Ingenieure. He became a member of the American Society of Mechanical Engineers in 1924.

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ALEXANDER BLASER, a welding and cutting expert with the Air Reduction Sales Co., New York, died at his home in Union City, N. J., March 24, after a long illness, at the age of 41 years. Mr. Blaser was born in Switzerland. He became an expert torch operator of unusual ability, particularly on the Airco-Davis-Bournonville oxyacetylene cutting machines, and a well-known figure at convention exhibits at which these machines were demonstrated. He excelled in cutting tool steel dies and similar work requiring heat treatment before and after cutting.

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WASHINGTON I. ATWOOD, founder and for many years president of the Atwood Mfg. Co., Amesbury, Mass., maker of lamps for vehicles, died at his home in that town, on April 2. Mr. Atwood was born in Fremont, Ohio, Feb. 9, 1841, and went to Amesbury about 45 years ago. He retired from business several years ago.

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EDGAR C. WOOLGAR, for ten years sales manager National Acme Co., Cleveland, died on April 4 at the age of 52 years. He became connected with the company 20 years ago as a machinery salesman in the Chicago territory and shortly afterward was made manager of the Chicago district office, continuing in that capacity until he was transferred to Cleveland as sales manager. About two years ago he suffered a severe illness from which he never fully recovered, although he was able to resume his duties at the head of the company's machinery sales department.

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H. BENSON WIESE, secretary Parkesburg Iron Co., Parkesburg, Pa., died of heart trouble at his home in Parkesburg March 29, after an illness of nine months. He was born and spent his early life in Bordentown, N. J. Before taking charge of the knobbling fires and bar mills of Parkesburg company in January, 1900, he was assistant supervisor of the Pennsylvania Railroad at Parkesburg. For many years he has been secretary the Parkesburg Iron Co. and in charge of purchases. His son, J. Frederick Wiese, has been western representative of the company for a number of years.

PERSONAL

Four general sales managers of Steel Corporation subsidiaries have been elected to vice-presidencies in their respective companies, announcement of their advancement being made in the past week. Edwin S. Mills becomes a vice-president of the Illinois Steel Co., Chicago; Jay I. Andrews, a vice-president of the American Sheet & Tin Plate Co., Pittsburgh; Willard Wilson, a vice-president of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and Blaine S. Smith, a vice-president of the Universal Portland Cement Co., Chicago.

E. S. MILLS

WILLARD WILSON

J. I. ANDREWS

General Managers of Sales advanced to Vice-Presidencies.

Edwin S. Mills, vice-president and general manager of sales of the Illinois Steel Co., obtained his education in the grammar and high schools of Cleveland. In 1895 he entered the employ of the Carnegie Steel Co. and later he was made general manager of the Pittsburgh Steamship Co., at Cleveland, and agent of the Oliver Iron Mining Co. When the Steel Corporation was organized he went to New York as assistant to Vice-President James Gayley and in 1910 became sales manager for the Carnegie Steel Co. at Chicago. In March, 1919, he was made general manager of sales of the Illinois Steel Co.

Jay I. Andrews has been identified with his company since its organization in 1900 and with the steel trade, except for about seven years spent in the meat packing industry, since 1889, when he entered the employ of the Illinois Steel Co. Mr. Andrews was born in Lakeland, Minn., in 1869 and received his education in the grade and high schools of Hudson, Wis., and at Macalester College, St. Paul. He was with the Illinois Steel Co. for three years, first in the company's general offices at Chicago and later at its Union and South Chicago works. He joined the American Sheet Steel Co., at its general offices in New York in 1900. This company and the American Tin Plate Co. were merged in 1904 in the present American Sheet & Tin Plate Co., and the general offices transferred from New York to Pittsburgh. On Oct. 1, 1905, Mr. Andrews was appointed assistant general manager of sales and on Jan. 1, 1909, general manager of sales.

Willard Wilson is a native of Youngstown, Ohio. He was connected for a time with the National Steel Co., one of the Moore Brothers' consolidations of which the Ohio Steel Co., Youngstown, was a constituent. In 1901 he went with the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., of which Don H. Bacon was president at that time. Mr. Wilson was one of the assistants of General Manager Charles McCreery in the operating department. In 1906, when Frank H. Crockard became president of the Tennessee Coal, Iron & Railroad Co., Mr. Wilson was transferred to the sales department, Frank A. Burr being general manager of sales. The same sales organization continued after the acquisition of the company by the United States Steel Corporation, and on the resignation of Mr. Burr, several years ago, Mr. Wilson became general manager of sales.

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R. R. Baxter, superintendent of the car-building plants of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been elected assistant to Vice-President H. C. Ryding, of that company.

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Maurice R. Hart, who has been with the Morse Chain Co., Ithaca, N. Y., for several years in the production department, and the last two years in the sales department, has been appointed manager of the Buffalo district. An office has been opened in the Ellicott Square Building, Buffalo.

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H. I. Keen has been elected managing director of the newly incorporated Allis-Chalmers of France, with headquarters at Paris.

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Rear Admiral Charles W. Dyson, retired, has joined J. Barraja-Frauenfelder & Co., New York and Philadelphia, as senior advisory engineer upon the powering of ships.

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Prof. C. W. Beese has been appointed head of the Department of Industrial Engineering at Pennsylvania State College.

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Leo J. Lambert is established at Salem, Mass., as a consulting engineer, specializing upon machine design.

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Charles Kandel has been appointed sales manager International Oxygen Co., Newark, N. J. Mr. Kandel is an "old hand" in the oxygen industry, and is well known to the trade, both as engineer and salesman.

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E. G. Howell, formerly manager of the raw material department in the Chicago office of Hickman, Williams & Co., 332 South Michigan Boulevard, Chicago, has been elected vice-president of Walter Erman & Co., 332 South Michigan Boulevard, Chicago, dealers in scrap materials. Mr. Howell started in 1905 as office boy in the executive department of the Republic Iron & Steel Co. Later he became chief clerk of the Chicago district branch and in 1911 he joined the sales forces of the Chicago office. During the war he was a captain of infantry, stationed at Camp Grant, Rockford, Ill. From 1919 to 1922 he was assistant treasurer for Briggs & Turivas, Chicago, dealers in iron and steel. In 1922 he accepted a position in the raw material department of the Chicago office of Hickman, Williams & Co. and in 1924 was promoted to assistant manager of that department. In October, 1925, he was appointed manager of the department to succeed the late E. F. Axner.

E. M. Hummer, vice-president and general manager of the Defiance Machine Works, Defiance, Ohio, sailed for Europe April 14 and will visit France, Belgium, Germany and Holland in the interests of his company and to renew sales representation covering its line of metal and woodworking machinery.

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Dan F. Eschenbrenner has been appointed manager of sales of the Missouri Rolling Mill Corp., manufacturer of bar steel, light angles and concrete reinforcing steel, 6800 Manchester Avenue, St. Louis.

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Nelson Brandt has rejoined the sales management force of the Link-Belt Co. and will be in charge of a new branch office which is to be opened up in Florida.

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W. C. Peterson has been appionted metallurgical engineer of the Donner Steel Co., Inc., Buffalo, with offices in Detroit. For some years he has had charge of the metallurgical department for Packard Motor Car Co. and for the last two years was engaged in a consulting capacity for several firms in Detroit and vicinity.

W. C. PETERSON

Ralph A. Butler has been appointed purchasing agent of the Donner Steel Co. to succeed John N. Allen, whose death was announced recently in this column. Mr. Butler has been with Donner Steel Co. for three years, and previous to that time was general manager of the Hastings Coal & Coke Co.

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Arthur T. Clarage, president Columbia Tool Steel Co., Chicago Heights, Ill., gave a talk on "Alloy and Carbon Steels in 1926," at a meeting April 8 of the Chicago chapter of the American Society for Steel Treating. The talk covered the various phases and elements entering into the manufacture and sale of tool steel for the purpose of assisting the buyer in selection.

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Leon Ehrman, recently with the Belfont Steel & Wire Co., has been made superintendent in charge of operations of the Mystic Iron Works, Everett, Mass. Previous to his connection with the Belfont Steel & Wire Co. he was assistant superintendent at Donora, Pa., later with the Midvale Steel & Ordnance Co., Coatesville, Pa., as assistant superintendent, and with the Marting Iron & Steel Co., Ironton, Ohio, as superintendent.

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A. F. Stengel, Buffalo, recently associated with Rogers, Brown & Co. and later with Waldo, Egbert & McClain, as vice-president, has been made head of the sales organization of the Mystic Iron Works, Boston and Everett, Mass., and will locate in Boston on or about May 1.

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Frank J. Weschler, president and general manager Indian Motocycle Co., Springfield, Mass., last week celebrated his completion of 20 years in the industry. He was tendered a banquet and diamond mementos of the occasion by department heads of the company.

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The Newark Foundrymen's Association at a meeting on Tuesday, April 20, will hear L. A. Hartley, director of educational training National Founders' Association, discuss the subject, "How to Organize a Foundry Apprentice Training Program." The Employers' Association of North Jersey will cooperate in this meeting, which will be held at the Downtown Club, Newark.

M. P. Regan, department superintendent Republic Iron & Steel Co., Youngstown, has resigned to become superintendent of the Struthers Furnace Co., operating a merchant blast furnace at Struthers, Ohio. Mr. Regan succeeds in this capacity Jules Richards, who has been transferred to the offices of the receiver, to assist in sales and general management.

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Howard B. Jernee has been appointed sales manager of the line shaft bearing department, Hyatt Roller Bearing Co., Newark, N. J., succeeding Frank S. Cole. Mr. Jernee is well known in sales and engineering circles through his former connections as construction engineer for E. I. du Pont de Nemours & Co., and later works engineer at the Oakland Motor Car Co. plant at Pontiac, Mich.

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David S. Hays has been appointed superintendent open-hearth department Edgar Thomson works, Carnegie Steel Co., Braddock, Pa. He succeeds John W. Kagarise, who has resigned. Mr. Hays formerly was assistant superintendent of open-hearth furnaces at the Homestead works of the company, but more recently was engaged in work in connection with a projected open-hearth plant for the Mingo, Ohio, works.

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W. P. F. Ayer, vice-president in charge of sales Walworth Co., Boston, has resigned, to take effect next summer, or as soon as the company can conveniently relieve him of his duties. He will continue as a director of the company. Prentiss L. Coonley has been made first vice-president and will assume charge of sales, with headquarters in New York. A New York sales office is to be established and opened about May 1 in the Vanderbilt Building.

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H. O. Price has been appointed Pittsburgh representative for the King Refractories Co., Buffalo, manufacturer of boiler baffles and high-temperature cement, with offices at 413 Union Trust Building. Mr. Price has been associated with the iron and steel industry, in practically all of its diversified lines, for over 20 years.

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F. R. Palmer of the Carpenter Steel Co., Reading, Pa., was the guest of the Boston chapter of the American Society for Steel Treating at its meeting April 2, at the General Electric Co., River Works, West Lynn, Mass. He gave a talk on the process of manufacturing tools, emphasizing the importance of design, machining, heat treating and grinding on the quality and usefulness of the finished tool. Prior to the meeting, members of the chapter inspected the testing laboratory where Stanley P. Rockwell demonstrated the operation of the dilatometer.

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George L. Gordon has been appointed assistant general manager of sales of the Lukens Steel Co., plate manufacturer, Coatesville, Pa., and will assist his brother, Frank H. Gordon, who is general manager of sales. George L. Gordon has been in the employ of the company since his graduation from the University of Pennsylvania, about 10 years ago.

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Arthur M. Long, for some time in charge of sales of sheets and tin plate for the Trumbull Steel Co., Warren, Ohio, has been appointed manager of tin plate sales of the Youngstown Sheet & Tube Co. and will have his headquarters in the Chicago office of the company.

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W. Vernon Phillips of F. R. Phillips & Sons Co., Pennsylvania Building, Philadelphia, importer and exporter of steel products, will sail for Europe on April 24 to be gone about two months.

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W. S. Pilling of Pilling & Co., pig iron, Philadelphia, has returned from Florida, where he spent about two months.

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Laird U. Park of the pig iron firm of Park & Williams, Real Estate Trust Building, Philadelphia, will sail within a few days on a business trip to Europe.

Machinery Markets and News of the Works

RAILROADS BUY

Several Roads Place Orders, Mostly for Large Machines

Reports from Leading Machine Tool Selling Centers Indicate a Slight Falling Off in Business

RAILROADS were active buyers of shop equipment during the week. The Florida East Coast was the largest buyer, its orders covering several large machines. Other roads which placed orders were the Texas & Pacific, Pennsylvania, Wabash, New York Central and the Nickel Plate. The Nashville, Chattanooga & St. Louis is inquiring for a number of tools, while the Louisville & Nashville is expected to buy four lathes soon.

Automobile manufacturers continue to buy in small lots, but the demand from this source is not comparable with that of a year ago.

While there is a fair volume of miscellaneous buying by companies in the general industrial field, the demand as a whole has shown definite signs of lessening.

One of the largest inquiries of the week comes from the Board of School Commissioners, Indianapolis, which will take bids up to April 22 on upward of 30 machines for use in the public schools.

New York

NEW YORK, April 13.

FROM some machine-tool selling agencies the report is that demand for tools has declined almost to the point of dullness, but from others the report is more favorable. While buying has declined somewhat this month, a fair volume of business is still being done. Inquiry, however, has undoubtedly fallen off. Among the week's sales are a jig boring machine to the International Motor Co., Plainfield, N. J.; a centering machine to the American Radiator Co., Buffalo; two bench lathes to A. Schrader's Son Co., Brooklyn; one bench lathe to the Waltham Watch Co., Waltham, Mass. A number of sales have been made to Pacific Coast companies, including the following: A bench milling machine to the Auto Sheet Metal Works, Los Angeles; a bench milling machine to the Fred C. Henson Co., Pasadena, Cal.; a 16-in. geared-head lathe to the Lane & Bowles Corporation, Los Angeles; a 350-lb. steam hammer to the Pacific Gas & Electric Co., San Francisco.

Contract has been let by the Morganite Brush Co., Inc., 519 West Thirty-eighth Street, New York, manufacturer of electric contacts, brush carbons and kindred electrical specialties, to the White Construction Co., 95 Madison Avenue, for a new four-story plant, 60 x 200 ft., at Long Island City, to cost about $230,000 with equipment. It is understood that the present plant will be removed to the new location. Krummbhaar & Co., 115 Broadway, New York, are architects and engineers.

Officials of the Servel Corporation, 51 East Forty-second Street, New York, manufacturer of electric refrigerating equipment, have formed a new company of the same name under Delaware laws, with capital of 1,000,000 shares of stock, no par value (assessed on the basis of $100,000,000 by the State), to take over and expand the present organization. Extensions in manufacture are planned.

The Brooklyn Bridge Freezing & Cold Storage Co., 24-26 Vandewater Street, New York, has acquired adjoining properties, comprising two-story, three-story and five-story structures. Plans are under way for remodeling for an addition, to include the installation of cold storage and refrigerating machinery. William Fellowes Morgan, Jr., is treasurer of the purchasing company.

F. A. D. Andrea, Inc., 1581 Jerome Avenue, New York, manufacturer of radio equipment, has awarded a contract to the White Construction Co., 95 Madison Avenue, through its affiliated organization, known as the Andrea Holding Co., for a four-story plant, 158 x 225 ft., to cost about $400,000 with equipment. The Ballinger Co., 100 East Forty-second Street, is architect and engineer. F. A. D. Andrea is president.

The Frank De Rosa Co., Fowler and Van Nest Avenues, New York, manufacturer of automobile bodies, is considering rebuilding the portion of its plant recently destroyed by fire, with loss reported at close to $75,000 including equipment. The Kingsbridge Iron Works, occupying a three-story building on neighboring site, sustained close to a like loss by the same fire and also plans early rebuilding.

The Board of Education, Newburgh, N. Y., plans the installation of manual training equipment in its proposed three-story high school at South Street and Fullerton Avenue, estimated to cost $300,000, for which bids will be asked on a general contract within a fortnight. A. F. Gilbert, 358 Fifth Avenue, New York, is architect.

The Packard Motor Car Co., 1681 Broadway, New York, has taken out a permit for the erection of a two-story service, repair and sales building, 80 x 205 ft., at 4650-56 Broadway, to cost about $200,000 with equipment. A machine shop and parts department will be installed. Albert Kahn, Inc., Marquette Building, Detroit, is architect.

The Board of Water Commissioners, Nyack, N. Y., is asking bids until April 29 for extensions in the municipal waterworks, including two low-lift motor-driven centrifugal pumping units, each with capacity of 1,500,000 gal. per day; and one high-lift unit, same type, with capacity of 2,000,000 gal.; steel tank and tower with capacity of 20,000 gal.; mechanical filter plant, etc. Nicholas S. Hill, Jr., 112 East Nineteenth Street, New York, is consulting engineer.

The Board of Education, Park Avenue and Fifty-ninth Street, New York, is said to be planning the installation of a manual training department in the proposed Theodore Roosevelt High School in the Bronx, for which an appropriation of $7,482,600 has been approved. The complete mechanical equipment for the structure is estimated to cost $600,000.

George M. Bartlett, 103 Park Avenue, New York, has asked bids on a general contract for a two-story automobile service, repair and garage building, 100 x 136 ft., at Mount Vernon, N. Y., to cost $100,000 with equipment.

The Aacone Engineering Corporation, Steiner Place, North Plainfield, N. J., Edward W. Lawlor, head, has acquired about 10 acres at Metuchen, N. J., as a site for a new plant for the manufacture of pebble mills and other clay-working machinery, including a rebuilding and reconditioning department. Work will begin on a one-story machine shop, with foundry, welding shop and other structures to be built at a later date.

The Eastern New Jersey Power Co., Allenhurst, N. J., is disposing of a bond issue of $1,350,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. H. L. Clarke is president.

The Battery Equipment Co., 266 Plane Street, Newark, N. J., has leased a one-story building at 71-73 South Orange Avenue, totaling about 3000 sq. ft. of floor space, for a new plant for the manufacture of storage battery equipment, including repairing and rebuilding department. It is purposed to remove the present works to the new location.

The Ideal Plating & Polishing Co., 29 Congress Street, Newark, has acquired the four-story and basement build-

The Crane Market

INQUIRY for locomotive cranes is in slightly larger volume in the New York district but few purchases are reported. Electric overhead crane inquiry is apparently improving slightly and one sizable list of cranes, one of the largest issued this year is reported current. The Phoenix Utility Co., 71 Broadway, New York, has asked for prices on a 150-ton gantry of slightly special construction and a 15-ton, 1-motor overhead crane. Two railroads have placed contracts with construction companies in New York for shops in the past fortnight, the Wabash Railway Co. and the Central Railroad of New Jersey.

Among recent purchases are:

Anaconda Copper Mining Co., 25 Broad Street, New York, a 15-ton, 26-ft. 1-in. span and a 15-ton, 16-ft. 8-in. span, hand power cranes, from Alfred Box & Co.

Cornell & Underhill, Spring and Greenwich Streets, New York, a 3-ton, 2-motor jib crane from Alfred Box & Co.

Public Service Production Co., Newark, N. J., a 5-ton, 36-ft. span hand power crane from Alfred Box & Co.

Anglo-Chilean Nitrate Corporation, New York, three 2-ton, 20-ft., 22-ft. and 23-ft. spans, single I beam cranes from an unnamed builder.

Baldwin Locomotive Works, Philadelphia, a used 25-ton, 67-ft. span Niles crane for Eddystone, Pa., from the Pond works of the Niles-Bement-Pond Co.

Bethlehem Mines Corporation, Bethlehem, Pa., a 20-ton used Brownhoist locomotive crane from Philip T. King, New York.

Moranti & Raymond, 42 Broadway, New York, a standard steam shovel for a subway contract, reported purchased from the Osgood Co.

Illinois Central Railroad, two standard railroad ditchers from the American Hoist & Derrick Co.

Aetna Foundry & Machine Co., Warren, Ohio, a 10-ton electric crane from the Northern Engineering Works.

Virginian Railway Co., Princeton, W. Va., a 5-ton electric traveling crane from the Northern Engineering Works.

Clearfield Machine Co., Clearfield, Pa., a 10-ton overhead crane from the Northern Engineering Works.

William Lang Sons, Cincinnati, a 5-ton overhead traveling crane from the Northern Engineering Works.

J. E. Moss Iron Works, Wheeling, W. Va., a 10-ton trolley from the Northern Engineering Works.

Oswego River Power Corporation, Oswego, N. Y., a 20-ton overhead crane with two 10-ton, 1-motor trolleys from the Northern Engineering Works.

Philadelphia Rubber Works, Akron, Ohio, a 2-ton overhead crane from the Northern Engineering Works.

Fairbanks Fibre Box Co., Middletown, Ohio, a 2-ton overhead crane from the Northern Engineering Works.

Columbia Steel Co., Butler, Pa., a 10-ton, 97-ft. span overhead crane from the Morgan Engineering Co.

ing at 55-59 Branford Street, totaling about 18,000 sq. ft. of floor space, and will remodel for a new plant. The present works will be removed to the new location.

The Board of Education, Bernardsville, N. J., plans the installation of manual training equipment in its proposed two-story high school estimated to cost $250,000, for which it is expected to ask bids on a general contract early in June. Rasmussen & Wayland, 36 West Forty-seventh Street, New York, are architects.

The Board of Freeholders, Court House, Newark, G. C. Bergen, purchasing agent, will soon begin the construction of a one-story machine shop and wood-working shop at the Hospital for Contagious Diseases, Belleville, to cost about $35,000 with equipment. Richard W. Erler, 45 Clinton Street, Newark, is architect.

The Bethlehem Shipbuilding Corporation, Elizabeth, N. J., plans the construction of a one-story foundry to replace a structure at its local Moore plant destroyed by fire April 3. Eric W. Ewertz is superintendent. Headquarters are at Bethlehem, Pa.

The Newark Pipe Cutting & Threading Co., 34 Rector Street, Newark, N. J., has been incorporated with capital of 1000 shares of stock of no par value, and has taken over the business formerly owned and controlled by the partnership of Betshick & Domorsky. The company will specialize in cutting and threading pipe from ¼ in. to 12 in.

New England

BOSTON, April 12.

MACHINE tool business is holding up well, but is spotty. Sales are confined very largely to single machines, with the call for new tools outnumbering used about two to one. Bookings are about on a level with March, which was one of the best months since 1920. Demand runs to a wide variety of equipment with milling machines the most active. Large New England manufacturing plants which have had numerous machines under consideration are buying one at a time.

The demand for small tools has fallen off somewhat, which is attributed to large purchases having been made recently. Further activity is anticipated before the close of the month.

The Bleachery Fuel Co., River Street, Waltham, Mass., will construct a coal elevator trestle for which conveying equipment is required. Plans are private.

The National Co., 110 Brookline Street, Cambridge, Mass., machinery manufacturer has under consideration the erection of a two-story plant. Details are withheld for the present. Plans are private.

The Foster Machine Co., South Broad Street, Westfield, Mass., has awarded contract for a plant addition. M. H. Harding, 6 Main Street, Westfield, is the architect.

Walter H. Phillips, 1083 Massachusetts Avenue, Cambridge, has plans for a one-story, 36 x 36 x 60 ft. manufacturing shop on Whittemore Avenue and Kimball Street.

The Joseph Hollander Mfg. Co., 172 Wade Street, Bridgeport, Conn., has been incorporated and is engaged in manufacturing small shelf hardware. The company is in the market for steel of various grades required in its work.

The Gerard Alloy Co., 405 West First Street, Boston, has filed plans for a one-story foundry.

The Schlotterbeck & Foss Co., Portland, Me., manufacturer of chemical products, has acquired property formerly used by the Boston & Maine Railroad, and is considering the erection of a new five-story plant, to cost in excess of $100,000 with equipment.

The Lowell Electric Light Corporation, Lowell, Mass., is arranging for a new stock issue to total about $816,000, a portion of the proceeds to be used for extensions and improvements.

The Pratt & Whitney Aircraft Corporation, Hartford, Conn., a subsidiary of the Pratt & Whitney Mfg. Co., is completing plans for the establishment of works for large production of nine-cylinder radial aircraft motors. The company has been occupying a five-story building at the plant of the parent organization on Capitol Avenue for engineering work and experimental operations and now proposes to equip the structure at a cost of about $300,000. Frederick B. Rentschler is president, and George J. Mead, vice-president.

The Foxboro Co., Neponset Avenue, Foxboro, Mass., manufacturer of measuring instruments, etc., has awarded a general contract to the Aberthaw Construction Co., Boston, for its proposed addition to cost close to $65,000.

The Mack International Motor Truck Corporation, 1143 Main Street, Worcester, Mass., with headquarters at 25 Broadway, New York, will break ground at once for its proposed one-story service, repair and garage building, totaling about 40,000 sq. ft., estimated to cost $200,000 with equipment. A general contract has been let to J. W. Bishop & Co., 109 Foster Street. Linwood Harmon is local manager.

The Seth Thomas Clock Co., Thomaston, Conn., has arranged a construction and improvement program to cost about $800,000. It is proposed to erect a new building to replace the present case shop, with the installation of new wood-working machinery and other equipment; a new building will be constructed at the metal-working shop to be used for a press room and kindred service, with portion of the equipment to be removed from an existing structure; a new assembling building will be built and additional equipment installed in the power house. Mason T. Adams is vice-president.

The Bridgeport Chain Co., Crescent Avenue, Bridgeport, Conn., manufacturer of steel and iron chains, has awarded a general contract to the T. J. Pardy Construction Co., 1481 Seaview Avenue, for a one-story addition, 40 x 82 ft.

The Bell Tone Mfg. Co., Bridgeport, Conn., has acquired the local three-story plant of the Stanley Works, New Britain, Conn., totaling about 32,000 sq. ft., used at one time by the Stanley Rule & Level Co., a subsidiary. The factory has not been occupied since 1924. It was secured by the purchasing company for about $100,000 and will be equipped for the manufacture of machine tools and parts.

S. H. Watkins, 164 Federal Street, Boston, architect, has asked bids on general contract for a two-story automobile service, repair and garage building at Somerville, Mass., to cost approximately $100,000 with equipment.

The Northern Connecticut Power Co., Thompsonville, Conn., recently formed by a merger of electric light and power interests in this section, is said to have plans under advisement for a new steam-operated electric power plant at Windsor Locks, Conn., to cost about $200,000. The J. G. White Engineering Corporation, 43 Exchange Place, New York, operates the company.

The Bath Iron Works, Bath, Me., for the second time within approximately six months, has been sold at auction. The land and buildings this time were purchased by C. M. Estabrook, representing Gaillard Realty Co., New York, industrial broker, for $53,000. Patterns and drawings of the plant were purchased for $300 by William A. Furber, former treasurer, except plans for Warren magazine grinders, which were purchased by the Great Northern Paper Co. for $1,200. Equipment and supplies, in some 2500 lots, went at generally low prices.

Philadelphia

PHILADELPHIA, April 12.

THE Bisbee Linseed Co., Drexel Building, Philadelphia, is having plans prepared for rebuilding its oil works at Delaware Avenue and Bigler Street, destroyed by fire several weeks ago, to cost in excess of $300,000 including machinery. Bids will soon be asked. E. C. Bisbee is president.

The Edward G. Budd Mfg. Co., Twenty-fifth Street and Hunting Park Avenue, Philadelphia, manufacturer of steel automobile bodies, has acquired 49 per cent of the capital stock of the Ambi-Budd Presswerke, G. M. B. H., Berlin, Germany, recently formed as an affiliated organization with the officials of the Ambi Co., Berlin. The new company is capitalized at 7,500,000 m., equivalent to $1,785,000, United States currency, and plans to utilize a fund of 5,000,000 m. for the construction of several plants to manufacture automobile bodies and automobile accessories. It is purposed to have the initial plant ready for service in the fall. Edward G. Budd and Hugh L. Adams of the American Budd organization will be active in the new company. Contract has been let to Thomas H. Livezey, American and Luzerne Streets, for a one-story addition to the Philadelphia plant, to be used largely for storage and distribution.

The Thornton-Fuller Automobile Co., Parkway and East Eighteenth Street, Philadelphia, has acquired property at Ardmore, Pa., as a site for a new service, repair and garage building, to cost about $150,000 with equipment. Plans will soon be drawn.

The Department of Public Works, City Hall, Philadelphia, has rejected bids recently received for pumping equipment for the Northeast sewage treatment works at Richmond Street and Wheatsheaf Lane, and will ask new bids in the near future. The low estimate received totaled $329,876, within the estimate of the department.

Packard, Inc., 319 North Broad Street, Philadelphia, has work in progress on its proposed four-story automobile service, repair and garage building on Broad Street, to be ready for occupancy early in July. It is estimated to cost $1,000,000 with equipment. The Turner Construction Co., 1713 Sansom Street, has the general contract.

Herbert J. Maroney, Franklin Trust Building, Philadelphia, operating a zinc and metal works, is reported to have acquired property at Bristol, Pa., consisting of five buildings on 7-acre tract and plans to use a portion of the plant for a proposed foundry and metal-smelting works. It is expected to install equipment and have the plant ready for service in July. About $100,000 is said to have been given for the site.

John Meigs, 1001 Chestnut Street, Philadelphia, architect and engineer, has plans for a four-story automobile service, repair and garage building, 90 x 170 ft., on Johnson Street, Germantown, to cost about $200,000 with equipment.

Fire, April 3, destroyed a portion of the plant of the Allegheny Wagon & Truck Co., 1737 North Front Street, Philadelphia, with loss reported at $17,000 including equipment. It is planned to rebuild.

The Water Department, Trenton, N. J., is considering the installation of a new centrifugal pumping unit at the high pressure waterworks station on Pennington Avenue, for auxiliary service, to provide a capacity of about 3,000,000 gal. per day.

The Board of Education, Trenton, N. J., is considering the installation of manual training equipment in the initial unit of the proposed new central high school on a 34-acre tract. It is estimated to cost in excess of $500,000. Ernest Sibley, Palisades, N. J., is architect.

The Central Motor Ramp Garage Co., 601 North Sixth Street, Allentown, Pa., W. E. Erdell, head, has asked bids on a general contract for a four-story service, repair and garage building, 85 x 140 ft., to cost $160,000. Jacoby & Everett, 510 Hamilton Street, are architects.

James W. Fuller, Jr., formerly one of the heads of the Fuller-Lehigh Co., Catasauqua, Pa., manufacturer of pulverizing and pumping machinery, etc., recently purchased by the Babcock & Wilcox Co., 85 Liberty Street, New York, boiler manufacturer, has organized the Fuller Co. It will specialize in the manufacture of patented conveying systems previously produced by the Fuller-Lehigh Co. but not included in the sale of that organization. A three-story building has been acquired on Bridge Street, Catasauqua, for company offices, and complete plant facilities will be provided. The initial investment is estimated in excess of $1,000,000. The Babcock & Wilcox Co., has been granted the exclusive rights to the conveying system, known as the Fuller-Kinyon system, for pulverized fuels only. Mr. Fuller is president of the new company.

The Benton School District, Benton, Pa., has plans under way for a new two-story vocational school for which it is expected to ask bids in the near future. W. Walter Whitman, 21 North Nineteenth Street, Harrisburg, Pa., is architect.

The Ulmer Packing Co., Pottsville, Pa., will soon begin the construction of a new power house to cost $70,000 with equipment.

The Glen Alden Coal Co., Linden Street and Jefferson Avenue, Scranton, Pa., has awarded a general contract to the Industrial Construction Co., Union Bank Building, for a two-story equipment repair and storage building, 80 x 130 ft., at West Pittston, Pa., with one-story automobile service, repair and garage building, 42 x 70 ft., adjoining, to cost $165,000. The company will also build a new coal-conveying tower at Taylor, Pa.

South Atlantic States

BALTIMORE, April 12.

THE Rustless Iron Corporation of America, Inc., Baltimore, recently formed under State laws with a capital of $500,000, has purchased the plant of the Hess Steel Co., near Orangeville, Baltimore, and will begin immediate operations for the production of rustless iron and stainless steel. Alwyn H. Wild is president; Roland Wild, vice-president, and George C. Scobie, secretary and treasurer.

Palmer, Willis & Lamdin, 513 North Charles Street, Baltimore, architects, have plans under way for a two-story automobile service, repair and garage building on St. Paul Street, to cost about $100,000 with equipment.

The City Council, Edenton, N. C., is planning the installation of electrically-operated pumping equipment at its municipal waterworks.

Fire, April 1, destroyed a portion of the plant of the Limeton Lime Co., Limeton, Va., with loss estimated at $35,000 including hydrating and other machinery. Plans for rebuilding are under consideration. Headquarters of the company are at Front Royal, Va. R. E. Herr is general manager.

James S. Simmons, 177 East Bay Street, Charleston, S. C., has inquiries out for tools for concrete working; also, for shovels, etc., and concrete mixer.

The United States Engineer, 1068 Navy Department Building, Washington, is asking bids until April 30 for furnishing, installing and testing two hand-power traveling cranes for the proposed water supply project of the District of Columbia.

The Palmer-Menhaden Products Corporation, Baltimore, recently organized, has arranged for temporary headquarters at 27 South Gay Street, Baltimore, care of Gascoyne & Co. Plans are under way for the erection of a rendering plant for grease, oil and kindred production at Reedville, Va., with two one-story main buildings, 200 x 400 ft., and 50 x 150 ft., respectively, to cost $75,000 with machinery.

The Capital Garage Co., 1416 H Street, N. W., Washington, will soon ask bids on a general contract for its proposed ten-story service, repair and garage building, 155 x 200 ft., at 1312-18 New York Avenue, N. W., estimated to cost $1,000,000, with equipment. A. B. Heaton, 1211 Connecticut Avenue, is architect.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a single drum hoisting engine to handle a ¾-yd. clam-shell bucket; a punch to handle 1-in. stock, with 12-in. or larger throat; an air compressor, belt-driven, capacity about 100 cu. ft. per min., and a 36-in. belt conveyor, about 150 ft. long.

The Southern Power Co., Charlotte, N. C., is said to have plans under way for a new steam-operated electric power plant for emergency service, to cost $600,000 with equipment. It will have an ultimate output of $100,000 hp. Extensions will be made in transmission lines.

The Common Council, Decatur, Ga., is considering the installation of pumping machinery in connection with proposed extensions in the municipal waterworks. The project is estimated to cost $60,000.

Bids will be asked at once by Northup & O'Brien, Starbuck Building, Winston-Salem, N. C., architects, for a four-story automobile service, repair and garage building, 160 x 200 ft., to cost $200,000 with equipment.

The City Council, Hagerstown, Md., has applied for permission to utilize surplus funds, totaling more than $150,000, for a proposed municipal electric light and power plant.

The Savannah Electric & Power Co., Savannah, Ga., recently acquired by new interests, is arranging a fund of about $1,500,000 for extensions and improvements in power plants and system. It is purposed to more than double the capacity of the present main steam-operated electric power station. A fund of approximately like amount will be expended for further expansion in 1927.

The North Carolina Lumber Co., Lake Waccamaw, N. C., is said to have plans under advisement for a new veneer mill, to cost in excess of $40,000 with equipment. F. B. Gault is president.

The Savannah River Lumber Co., Gilmania, S. C., has plans for a one-story lumber and wood-working mill to cost about $90,000, of which more than $50,000 will be expended for equipment. The installation will include a band mill, edger, trimmer, planer and other machinery. A power plant will also be equipped. C. S. Brown is superintendent.

The City Council, Luray, Va., plans the installation of a pumping plant in connection with proposed extensions in the municipal waterworks, to have a capacity from 1,750,000 to 3,000,000 gal. per day. The project is estimated to cost $85,000. G. H. Massie, Norfolk, Va., is engineer.

Morris & Co., Anderson, S. C., have leased a building on West Earle Street, and will remodel for a cold storage and refrigerating plant to cost about $25,000.

The Clinton Mfg. Co., Inc., Clinton, N. C., plans the installation of a two-press oil mill and auxiliary equipment.

The Virginia-Carolina Chemical Corporation, Richmond, Va., recently organized to take over and expand the plants and business of the Virginia-Carolina Chemical Co., in receivership, has acquired the properties and assets of the company for a consideration of $18,498,810 and plans the early resumption of operations at the different mills. Harold W. Newman, Jr., is president of the new company, and William Fitzgibbon, secretary.

The Eastern Shore Gas & Electric Co., Salisbury, Md., plans extensions and improvements in plants and system. The work is estimated to cost $20,000 with equipment, and will be carried out at Exmore, Va., and vicinity, where other utility properties recently were taken over.

The Indianridge Water & Light Co., Raleigh, N. C., is planning the installation of pumping equipment, motors, tank and tower and other equipment for water plant extensions.

Buffalo

BUFFALO, April 12.

BIDS are being asked on a general contract until April 19 by the Rochester Motor Inn, Inc., 208 National Bank Building, Rochester, I. W. Steele, in charge, for a six-story automobile service, repair and garage building, 130 x 140 ft., to cost $325,000 with equipment. Gordon & Kaelber, Sibley Block, are associate architects.

The Todd Co., Rochester, N. Y., manufacturer of check protectors, has awarded contract to the H. K. Ferguson Co., Cleveland, for a second addition to its plant, 50 x 100 ft., to cost about $45,000. The same contractor has work under way on another addition at the factory, which will soon be ready for machinery.

The Mohawk & Hudson Power Corporation, Schenectady, N. Y., C. S. Ruffner, president, is concluding negotiations for a controlling interest in the Syracuse Lighting Co., Inc., Syracuse, N. Y. Plans are under advisement for extensions and betterments in plant and system, including transmission line construction.

The Otis-Sawyer Foundry & Machine Co., East Ninth Street, Oswego, N. Y., has purchased a site on West Seneca Street for its proposed one story machine shop and foundry to cost $65,000, and will begin superstructure at once. William Sawyer is head.

The Gould Car Lighting Corporation, Depew, N. Y., has acquired the train lighting division of the Gould Coupler Co., with local plant, and will manufacture this line of equipment in the future. The company has also purchased the assets of the Lexington Machine Corporation, 347 Madison Avenue, New York, manufacturer of kindred apparatus, and will consolidate with its organization. A note issue of $1,000,000 is being sold to take over the properties and to arrange production requirements.

The Estes Rainbow Power Co., Ausable Chasm, N. Y., J. J. Rogers, president, has plans under way for a new hydroelectric power plant on local site, to cost close to $100,000 with machinery. C. T. Middlebrook, Jr., 68 State Street, Albany, N. Y., is architect and engineer.

The City Council, Perry, N. J., is arranging an appropriation of $28,000 for the installation of auxiliary pumping equipment for the municipal waterworks and supplementary pipe line.

The City Council, Jamestown, N. Y., is considering the installation of an automatic refrigerating plant and auxiliary equipment in the municipal public market.

The Riley Dry Dock Co., 360 West Genesee Street, has filed plans for a small repair shop.

Gulf States

BIRMINGHAM, April 12.

PLANS are being completed by the Skelly Oil Co., Eldorado, Kan., for the construction of a new gasoline refinery in the Panhandle field, near Amarillo, Tex., to cost approximately $1,000,000 with equipment. W. J. Skelly is president.

The Texas Central Power Co., Frost Building, San Antonio, Tex., is considering the erection of a one-story ice-manufacturing plant at Sinton, Tex., to cost $65,000 with machinery. It is also arranging for a one-story ice-manufacturing plant at Gonzales, Tex., to cost close to $90,000. J. Marriott is company engineer.

Ovens, power equipment, conveying and other machinery will be installed in the proposed new plant to be constructed by the Southern Baking Co., 2 Rector Street, New York, on site purchased at Daytona Beach, Fla., to cost $450,000 with machinery.

The Dallas Vocational School, Dallas, Tex., T. E. Jackson, chairman of board of directors, has acquired an additional tract of 13 acres, adjoining present 14-acre site on Cedar Springs Road, Perry Heights, for the proposed new vocational school, the ultimate group to occupy the entire site. Plans are under way for the initial building, for which bids will soon be asked on a general contract. Lang & Witchell, Dallas, are architects.

Burt Brothers, Kean Block, Second Street, Palatka, Fla., are arranging for the establishment of a local plant for the manufacture of sand-lime brick products, and are in the market for complete equipment. R. W. Burt is in charge.

The Florida Power & Light Co., Miami, Fla., has acquired the municipal electric system and waterworks at Coral Gables, Fla., for $1,000,000 and plans extensions and betterments. The company is now carrying out an expansion program to cost about $20,000,000, including power plant additions and the construction of about 700 miles of transmission lines from St. Augustine to Miami Beach, with extension to the west coast. A bond issue of $30,000,000 was recently sold for financing the project. The company is a subsidiary of the American Power & Light Co., New York.

The Bastrop Pulp & Paper Co., Bastrop, La., is said to have plans for extensions, to include the erection of new buildings and the installation of machinery to increase the output. The work will cost close to $900,000 with equipment.

The Louisiana Oxygen Co., 402 Water Street, Mobile, Ala., is considering plans for an addition for the production of acetylene and kindred products, reported to cost about $30,000 with equipment.

The Tampa Gas Co., Tampa, Fla., is arranging a bond issue of $2,500,000, a considerable portion of the proceeds to be used for extensions and improvements, including the installation of additional equipment.

The Pullman Car & Mfg. Corporation, Chicago, is said to be considering the construction of a new car repair shop in the vicinity of Dallas or San Antonio, Tex., to cost $100,000 with machinery. L. S. Hungerford is vice-president and general manager.

The Bonita Building & Lumber Co., 209 Keystone Building, Houston, Tex., J. C. Stedman, head, has begun the construction of a one-story wood-working plant at 8401 Harrisburg Boulevard, 100 x 150 ft., to cost $50,000 with equipment.

The Woodstock Slag Co., Southern Railway Building, Birmingham, has inquiries out for a 24-in. shaper, for installation in its machine shop. George A. Mattison, Jr., is manager.

The Louisiana Ice & Utilities Co., Baton Rouge, La., will soon begin the construction of a new ice-manufacturing plant, to cost about $65,000 with machinery. John E. Egan is manager.

The Pan-American Petroleum & Transport Co., 944 St. Charles Street, New Orleans, is considering the construction of a new storage and distributing plant at Birmingham, to cost close to $100,000 with equipment. R. G. Stewart is president.

The Polk County Board of Public Instruction, Lakeland, Fla., plans the installation of manual training equipment in its proposed local high school to cost $450,000, for which bids will be asked at once. Headquarters of the board are at Bartow, Fla.

The Orlando Utilities Commission, Orlando, Fla., plans the construction of an addition to the municipal electric light and power plant, 45 x 90 ft., to cost $50,000 with equipment. Robert & Co., Bona Allen Building, Atlanta, Ga., are architects and engineers.

The Gulf Refining Co., Frick Annex, Pittsburgh, has acquired property at Okeechobee, Fla., and is said to be arranging for the erection of a new storage and distributing plant to cost approximately $80,000 with equipment.

Pittsburgh

PITTSBURGH, April 12.

WHILE the machine tool market can hardly be called active, most of the dealers and manufacturers' representatives appear to be satisfied with orders coming in. Replacements are furnishing a fair amount of business. It is not yet decided whether the Pennsylvania Railroad will buy machinery to replace that recently lost in the fire at its Pitcairn shops. Similar machines are in the Allegheny shops which are little used and these may be moved to Pitcairn. The Pittsburgh & Lake Erie Railroad has bought a Niles 100-in. boring mill; the McClintic-Marshall Construction Co. bought a 60-in. rotary planer and a 42-in. rotary planer, and R. H. Heilman, Pittsburgh, purchased a bench milling machine.

An appropriation of $1,000,000 has been authorized by the Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, for the construction of all-steel river equipment, to be used primarily on the Allegheny River. It is said that the company will defer the placing of contracts until dam No. 5, on river noted, is completed.

The West End Machine Co., Pittsburgh, has leased a building on West Carson Street, and will establish a new plant at this location.

The Duquesne Light Co., 435 Sixth Avenue, Pittsburgh, has arranged a fund of about $18,000,000 for extensions and improvements in its plants and system during the remainder of the year. The work will include the installation of a fourth generating unit and auxiliary machinery at the Colfax power station at Springdale, and new power substations and transmission lines in other districts.

The Ninth Avenue Garage, Ninth Avenue, McKee's Rocks, Pa., operated by Baehr Brothers, has plans for a four-story and basement service, repair and garage building, 70 x 140 ft., to cost about $100,000 with equipment. C. R. Moffitt, Masonic Building, is architect.

The Guyan Machine Shops, Logan, W. Va., machinery dealers, have inquiries out for a grinder for reconditioning milling cutters, twist drills, etc.; and a centering machine to handle 5-in. diameter stock, about 72 in. long.

The Conemaugh Iron Works, Inc., Blairsville, Pa., is resuming operations following reconstruction after a fire last fall which caused a damage estimated at $400,000. The new plant consists of a three-story machine shop and pattern shop, 60 x 75 ft., one-story foundry, 65 x 312 ft. The company specializes in the production of enameled iron sanitary ware and will give employment to more than 400.

The Erie Lighting Co., 21 West 100th Street, Erie, Pa., is having plans drawn for a two-story and basement automobile service, repair and garage building, 70 x 168 ft., for company motor trucks and cars, to cost about $65,000.

Thomas W. Sliger, First Street and Third Avenue, Huntington, W. Va., will erect a one-story wood-working plant, 60 x 85 ft., and will soon purchase a planer, resaw, rip saw and other tools.

The Surety Oil Co., Titusville, Pa., and the Pennsylvania Refining Co., Karns City, Pa., affiliated, have acquired a controlling interest in the American Oil Works, Titusville, and will operate the property in the future. Extensions will be made, including the installation of a new lubricating oil plant. John A. Beck, heretofore connected with the Pennsylvania company, has been made president; J. B. Turk is general manager.

Cincinnati

CINCINNATI, April 12.

THE purchase of considerable equipment by railroads has been the outstanding feature of the local machine tool market. The Florida East Coast has bought a 48-in., 400-ton wheel press, a 44-in. heavy boring mill, a 6-ft. right line radial drill, a 3-ft. Morris radial drill, two Cincinnati high speed upright drills, three Ransom grinders, two 40-in. and one 20-in. upright drills. The Texas & Pacific, Dallas, Tex., has placed an order for a 100-ton bushing press, a 30-in. x 14-ft. lathe and a 36-44 side head boring mill with the Niles-Bement-Pond Co. The Pennsylvania Railroad has taken a 100-in. quartering machine for its Columbus, Ohio, shops, and the Wabash Railroad bought a 90-in. heavy driving wheel lathe for use at St. Louis. The New York Central has purchased two 24-in. motor-driven drills and the Nickel Plate has contracted for several shapers. The Nashville, Chattanooga & St. Louis is inquiring for a number of tools, including three lathes. The Louisville & Nashville, which took bids about a month ago on four 16-in. lathes, is expected to buy soon.

Dodge Brothers, Inc., which bought considerable equipment last week, is said to be inquiring for a large number of lathes. Several other automobile makers bought three or four lathes each the past week. There has been a fairly steady flow of general industrial business. A local builder booked an order for 50 paper making machines, while an oil company in the Southwest has taken three 17-in. and three 19-in. lathes. The Illinois Steel Co., South Chicago, has bought a 3-ft. Morris radial drill, and the Lima Locomotive Works, Lima, Ohio, is the buyer of a 20-in. Aurora drill. The Hudson Coal Co., Mayfield, Pa., has purchased a 4½-ft. Morris radial drill. A company in Dayton, Ohio, has taken two radial drills, and the Canadian Pacific Railroad has bought two gap lathes and a turret lathe.

A local builder booked three lathes for delivery to a Pacific Coast concern and one machine for shipment to St. Petersburg, Fla. An order for two lathes for export to Mexico has been received locally. The Pacific Gas & Electric Co., San Francisco, bought a 350-lb. single frame steam hammer, and the Midvale Co., Philadelphia, purchased a 48-in. x 46-ft. forge lathe. The Niles-Bement-Pond Co. sold a No. 4 bending roll, ⅜-in. x 10-ft., to the American Sheet & Tin Plate Co., Pittsburgh. The Mexican Petroleum Co. bought a 1500-lb. single frame steam hammer. The John Steptoe Co. has booked a 24-in. shaper for a Syracuse, N. Y., company, and a 16-in. miller for Chicago delivery.

The demand for used machinery has been gradually increasing. The call for used shapers has been particularly good and since the supply is small, dealers have been able to command high prices. The Steacy-Schmidt Mfg. Co., York, Pa., has bought a 10-ft. Niles boring and turning mill.

The Cumberland Telephone & Telegraph Co., Louisville, has plans for a one-story automobile service, repair and garage building at 1240 Oldham Street for company trucks and cars, to cost $50,000 with equipment. Headquarters are at Atlanta, Ga.

The Federal Can Co., Benton Avenue, Nashville, Tenn., will soon begin the construction of a one-story addition to cost about $45,000 with equipment.

The Lexington Engine & Machine Co., Lexington, Ky., recently organized, has acquired the plant and business of the Lexington Engine & Boiler Works. Plans are under way for extensions and improvements, to include the in-

stallation of a new department for the manufacture of sheet metal products, including automobile fenders, etc. R. E. Monroe is president.

The Fowler-Wolfe Sheet Metal Works, Paducah, Ky., manufacturer of boilers and other plate products, has removed to a new plant on the waterfront where facilities will be provided for increase in production.

The Dunlap Furniture Mfg. Corporation, Dunlap, Tenn., has begun the construction of a new one-story plant to cost about $40,000, of which the machinery installation will represent approximately $25,000. H. P. Payne is secretary.

Kuhns Brothers, Inc., Eaton Avenue, Dayton, Ohio, has awarded a general contract to Shook & Billiter, Schwind Building, for a one-story foundry addition, 70 x 200 ft., to cost approximately $65,000. The company manufactures pipe fittings and kindred products. Herman & Brown, Reibold Building, are architects.

The Cincinnati Mfg. Co., 1900 Gest Street, Cincinnati, manufacturer of architectural iron and bronze products, has taken out a permit for its five-story addition, 60 x 75 ft., to cost clost to $100,000. Bert L. Baldwin, Second National Bank Building, is architect.

The Randle Machinery Co., 1723 Powers Street, Cincinnati, has inquiries out for an engine-generator set, 50 to 75-kw. capacity, direct-connected, 3-phase, 60-cycle, 440-volts; also for a similar generator set, capacity about 20 kw.

The Board of Education, Belmont, Ohio, is considering the installation of manual training equipment in its proposed three-story central high and grade school at Belmont Junction, near Dayton, to cost $325,000, for which bids will be asked on general contract in 30 to 60 days. Walker & Norwick, American Building, Dayton, are architects.

Fred W. Upington, 255 East Short Street, Lexington, Ky., manufacturer of automobile bodies, will rebuild the portion of his plant destroyed by fire March 29, with loss of $50,000 including machinery.

The Samuel Stamping & Enameling Co., Chattanooga, Tenn., recently formed with a capital of $100,000 by S. S. Price, 646 Vine Street, and associates, is considering tentative plans for the establishment of a factory for the manufacture of enameled iron products.

The Inland Mfg. Co., Dayton, Ohio, has commenced an enlargement program which calls for an expenditure of approximately $300,000 within the next few months. The company is a division of the General Motors Corporation and is largely engaged in the manufacture of automobile steering wheels and rubber parts. The plant has had a capacity of 6000 wheels a day and additional floor space and equipment is being added to increase the capacity about 25 per cent. Increased facilities for the manufacture of both hard and soft rubber automotive parts will also be provided.

Indiana

INDIANAPOLIS, April 12.

PLANS are being drawn for a one-story machine shop for the Peters & Marske Co., Michigan City, Ind., general machinist, to cost $25,000. Ahlgrim & Boonstra, Michigan City, are architects.

The Barber Mfg. Co., Anderson, Ind., manufacturer of bed springs and other steel specialties, has awarded a general contract to Hugh Malone, Anderson, for a one-story addition to its machine department, 35 x 200 ft., to cost $50,000.

The Superior Paper Products Co., Fairmount, Ind., is considering rebuilding the portion of its plant recently destroyed by fire, with loss reported at $60,000 including equipment.

The Chicago Sewer Pipe Co., Brazil, Ind., is planning to begin work soon on rebuilding the portion of its vitrified pipe manufacturing plant destroyed by fire last fall, with loss reported in excess of $50,000 including equipment.

The Board of Education, Remington, Ind., is considering the installation of manual training equipment in its proposed one-story and basement high school estimated to cost $100,000. J. Bruck, Kentland, Ind., is architect.

The State Line Generating Co., 72 West Adams Street, Chicago, Samuel Insull, president, will proceed with the construction of its proposed steam-operated electric generating plant on Lake Michigan at Hammond, Ind., where site has been acquired. It will have an initial output of 200,000 kw. Permission has been secured for a stock issue to provide, in part, for the project.

Ovens, power equipment, conveying and other machinery will be installed in the two-story and basement addition, 60 x 82 ft., to be erected at the plant of the Purity Bakeries Corporation, Indianapolis, to cost about $50,000. Headquarters are at 118 West Forty-seventh Street, Kansas City, Mo.

The International Harvester Co., Fort Wayne, Ind., has plans for a one-story addition, 150 x 240 ft., to cost about $75,000 with equipment. Headquarters are at 608 South Michigan Avenue, Chicago.

The Anderson Stove Works, Anderson, Ind., will soon break ground for an addition to cost about $35,000. E. F. Miller, Farmers' Trust Building, is architect.

Milwaukee

MILWAUKEE, April 12.

BUSINESS in machine tools continues active, with inquiries also in good volume. A relatively satisfactory total of new orders is coming from a variety of sources. The automotive industries are letting down in their purchases, but this decline appears to be offset by demand from other fields. Employment reports mention the call for skilled molders, machinists and machine hands, with metal trades payrolls maintained at the peak recently reached.

The Hamilton Mfg. Co., Two Rivers, Wis., will take bids from April 10 to 26 on the general contract for the erection of additions estimated to cost $750,000 to its plant, manufacturing steel and wood furniture for printing houses, dental offices, etc. Plans by Lockwood, Greene & Co., 400 North Michigan Avenue, Chicago, call for a five-story brick and steel factory and storage building, ell-shaped, 120 x 130 ft. overall, and a one-story structure, 120 x 250 ft. The new group will include several additional units to be erected later. George Vits is president.

The Mack International Motor Truck Corporation, 25 Broadway, New York, has awarded contracts for the erection of a branch house in Milwaukee to cost $250,000. It will be 190 x 425 ft., of steel, concrete and tile, one story and part basement, and was designed by S. Scott Joy, architect, New York. The Milwaukee branch now leases quarters at 437 Prospect Avenue. Rodney Hallam is branch manager.

The Zenith Foundry Co., Milwaukee, has been organized with $30,000 capital stock to acquire and continue the operation of the West Allis Iron Works, Seventy-fifth Avenue and Elm Street, West Allis. The principals are Edward T. Freeman, vice-president Wisconsin Grey Iron Foundry Co.; Clarence H. Mueller, vice-president Phillip Gross Hardware Co., and W. R. Tanner, reprfesentative of the S. Obermayer Co., Chicago. The plant consists of a main shop, 100 x 120 ft., 35 to 40 ft. high, with two acres, and has a capacity of about 25 tons a day. The new owners plan to make a gray iron and semi-steel castings in sizes up to 6 tons. Mr. Freeman will be works manager.

The Valley Iron Works, Appleton, Wis., conducting a general fabricating, foundry and machine shop business, has acquired property adjoining its shops for extensions. Preliminary plans are being drawn for the first unit of a group of additions to be erected over a period of several years, the initial construction to be undertaken about May 15.

The Luther Grinder Mfg. Co., 285 South Water Street, Milwaukee, has placed contracts for the erection of a manufacturing addition, 40 x 75 ft., two stories and basement, at 296 Lake Street, to increase its output of tool grinders, wrenches, tools, etc. About $30,000 will be invested in buildings and new machinery. W. T. Hardy is president and general manager.

The Dental Burr Co., Weyauwega, Wis., which has been practically idle for the past three years, is resuming operations, having accepted a contract that will absorb its capacity output for a five-year period. The plant contains 20 production tools, which are being overhauled and replacements made. No new equipment will be required for the present.

Brown County Motors, Inc., 610 Main Street, Green Bay, Wis., expects to take bids about April 24 for the erection of a new automotive sales and service building, 75 x 170 ft., three stories and basement, costing about $90,000 with equipment. Plans are being completed by Oppenhamer & Obel, architects, Green Bay and Wausau, Wis.

The Great Lakes Golf Corporation, Milwaukee, manufacturer of iron and wood golf clubs, course fixtures and equipment, and specialties, has leased the entire fourth floor of the Mansfield Building, Fourth and Poplar Streets, and will equip 8000 to 9000 sq. ft. for production. Immediate occupancy is being taken of the new quarters.

The Milwaukee Brass Specialty Co., 3200 Senator Avenue,

Milwaukee, let the general contract to Byrne Bros., 3110 Burleigh Street, local, for erection of a new foundry and machine shop, 56 x 40 x 104 ft., and 1321 Thirtieth Street. It will cost about $40,000 with equipment.

Chicago

CHICAGO, April 12.

THERE is slightly less activity in this market. A substantial volume of business is before the trade, however, and the belief is that buying has been retarded because of recent spring storms which kept consumers from shopping around. Prices as a rule are steady and deliveries, if changed, are slightly improved in some lines and for some sizes of machine tools. The Nash Motors Co., Kenosha, Wis., has bought a Heim centerless grinder and 10 10-in. x 36-in. cylindrical grinders for its Milwaukee plant. The Economy Fuse Co., Chicago, has purchased a universal grinder and the National Lock Co., Rockford, Ill., has bought two 16-in. shapers. The Morden Frog & Crossing Co., Chicago, has purchased two Gray Maximum-Service frog and switch planers and a Niles widened pattern planer. A manufacturer of railroad equipment bought an openside, planer-type grinder and a can maker purchased two punch presses. Sales in this territory also include a jig boring machine to the Gisholt Machine Co., Madison, Wis.; a bench milling machine to the Baldor Electric Co., St. Louis, and a spline milling machine to the Trio Tool Co., St. Louis.

The Board of School Commissioners, Indianapolis, Ind., has issued the following list of shop equipment for the Washington and Thomas Jefferson high schools. Bids close April 22. All tools are to be driven by 220-volt 60-cycle 3-phase motors.

Six 12-in. x 30-in. wood turning lathes.
Two 20-in. band saws, capacity to cut up to 8-in. under the guide and approximately 18-in. from the saw column.
Two universal bench saws, 21-in. x 24-in. tilting table.
Two hand planer and jointers, capacity to plane 6-in. wide, rabbet ½-in. deep.
Two vertical hollow chisel mortisers and borers, vertical movement of head 3¾ in. and of table 17-in.
Two bench drills with 2½-in. up and down run of spindle, 7-in. up and down run of table.
Two combined disk and drum sanders, drum 13-in. in diameter and 16-in. face.
Two belt sanders, with bed approximately 10-in. x 23-in.
Two 14-in. sensitive drills.
Two two-wheel type ball bearing tool grinders, wheels 6-in. x 1-in.
One engine lathe, 14 in. or 16 in. x 6 ft.
Six engine lathes, 11 in. or 13 in. x 3 ft.
One 12-in. shaper with swivel head and automatic cross feed.
One milling machine, 8 in. x 22 in., range of speed 15 to 354 r. p. m.
One power hack saw with tilting table and automatic stop.
Two ball-bearing speed drills, 14-in., with tilting table.

The General Metal Spinning Co., 2834 North California Avenue, Chicago, will build a one story factory, 40 x 100 ft., at 2643 Belmont Avenue, to cost $90,000. B. J. Rappaport, 6709 Lakewood Avenue, is architect.

The Creamery Package Mfg. Co., 67 West Kinzie Street, Chicago, manufacturer of cream separators, dairy machinery, etc., is contemplating a one-story addition to its plant at De Kalb, Ill., to cost $85,000 with equipment. E. W. Chandler is president and general manager.

Benjamin F. Price, 1609 Tribune Tower, Chicago, has inquiries out for a traveling crane, about 75-ft. span, 23-ft. lift.

The Blackhawk Foundry Co., Davenport, Iowa, will begin the construction of a one-story addition to its foundry to cost about $25,000, for which a general contract recently was let to Owens & Bivens, 227 Scott Street.

The Colorado & Southern Railroad Co., Denver, Colo., is said to have plans under advisement for a new engine house and machine shop at Fort Collins, Colo., with complete locomotive repair facilities, to cost $100,000 with equipment.

J. J. Nartzik, Inc., Grand Rapids, Minn., contemplates the construction of a one-story addition to its veneer mill, 35 x 100 ft., to cost about $40,000 with machinery.

The Board of Education, Lake Mills, Iowa, is considering the installation of manual training equipment in its proposed two-story high school to cost $125,000, for which superstructure will soon begin. Thornwald Thorsen, Forest City, Iowa, is architect.

The Montana Power Co., Butte, Mont., will soon begin the construction of a new hydroelectric power plant at Great Falls, Mont., with capacity of 25,000 hp., to cost close to $1,000,000 with transmission lines. Eastern offices are at 25 Broadway, New York.

Zangerle & Peterson, 2164 Clybourn Avenue, Chicago, manufacturers of furniture, have awarded a general contract to F. E. Doherty, 133 West Washington Street, for a new six-story plant, 50 x 132 ft., to cost $200,000 with equipment. A. A. Zangerle is president.

The City Council, Brainerd, Minn., has plans for extensions and improvements in the municipal electric light and power house, to include the installation of additional equipment. The Water and Light Board is in charge. L. P. Wolff, Globe Building, St. Paul, Minn., is architect.

The Board of Education, Duluth, Minn., is considering the installation of manual training equipment in its proposed three-story high school in the vicinity of Twenty-ninth Avenue, East, and Second Street, estimated to cost $475,000, for which bids are being asked on a general contract. C. Kelley, Lonsdale Building, is architect.

Pacific Coast

SAN FRANCISCO, April 7.

PLANS have been drawn by the Pacific Gas & Electric Co., 245 Market Street, San Francisco, for two one-story equipment, storage and distributing plants, with repair departments, at Chico and Marysville, Cal., respectively, each to cost about $30,000. The company engineering department is in charge.

The Orange County Ice Co., Anaheim, Cal., will erect a one-story ice-manufacturing plant at Fullerton, Cal., to cost $50,000. John Molt is general manager.

The Chiloquin Lumber Co., Chiloquin, Ore., is considering plans for rebuilding the portion of its lumber and planing mill destroyed by fire March 30, with loss reported at $110,000 including equipment.

The Washington Water Power Co., Spokane, Wash., has preliminary surveys under way for a proposed hydroelectric power development at Lake Chelan, near Chelan, Wash., to cost close to $5,000,000 with transmission system.

P. A. Briggs, 1017 West Broadway, Spokane, Wash., will build a one-story machine shop for which a general contract has been awarded to A. G. Moodhe, 815 North Jefferson Street.

The Union Rock Co., Los Angeles, has acquired the plant and property of the Fewell & Webb Rock & Gravel Co., 415 Second Street, Hermosa Beach, Cal., for a branch plant. Extensions are said to be under consideration. E. S. Oliver has been appointed manager.

The American Portable House Co., 601 Alaska Street, Seattle, plans the construction of a one-story addition, 60 x 140 ft., sawtooth roof type, to cost $35,000 with equipment.

Stoddard & Son, Lyon Building, Seattle, architects, have asked bids on a general contract for a three-story and basement automobile service, repair and garage building, 110 x 120 ft., to cost $130,000 with equipment.

The Hauser Packing Co., Los Angeles, will soon take bids for a two-story cold storage and refrigerating plant, 110 x 130 ft., to cost $60,000 with equipment. W. W. Ache, 1616 Fourth Avenue, is architect.

The Washington Pulp & Paper Corporation, Port Angeles, Wash., has completed plans for extensions, to include several buildings and the installation of additional machinery, estimated to cost $1,000,000. A general contract for buildings has been awarded to Christopher Kuppler & Sons, Port Angeles. V. D. Simons, 431 North Dearborn Street, Chicago, is engineer.

The Acme Gravel Co., Potrero Avenue and Army Street, San Francisco, will not proceed with proposed plants at Oakland and Berkeley, Cal., as recently reported, and the projects will continue in abeyance.

The Modern Brass Foundry, Inc., 2213½ Compton Avenue, Los Angeles, has been organized with capital stock of $50,000 to manufacture brass, bronze and aluminum castings. The company has leased a factory, but contemplates building a new plant in about a year. Allan Cohn is secretary.

Cleveland

CLEVELAND, April 12.

MACHINE tool sales were rather light in this territory the past week, but dealers received a fair volume of new inquiry. The Nickel Plate railroad purchased a 16-in. Pratt & Whitney lathe for its Frankfort, Ind., shops and is about to buy several other machines. Demand for turret lathes continues active, but orders are confined to one or two machines. The call for presses is light. Buying by the automobile industry continues limited. While some fair lots of machines are pending from that industry in Detroit, the placing of orders is being deferred. The U. S. Aluminum Co., Cleveland, has bought one 13-in. and one 16-in. geared-head lathes. The Warner & Swasey Co., Cleveland, bought a jig boring machine and the Galion Iron Works, Galion, Ohio, purchased a centering machine.

The Toledo Scale Co., Toledo, Ohio, contemplates the erection of an addition. L. G. Christman is secretary.

The Seneca Wire & Mfg. Co., Fostoria, Ohio, has taken bids for a factory, 160 x 375 ft. L. E. Kinn is president.

The Superior Motor Coach Body Co., Lima, Ohio, contemplates the erection of an addition.

The Miller Tire & Rubber Co., Akron, Ohio, has completed plans for a one-story addition, 80 x 250 ft., to a rubber reclaiming plant. J. A. Pfeiffer is president; the Austin Co., Cleveland, is the engineer.

The Austin Co., Cleveland, has taken a contract for extensions to the plant of the National Radiator Co., Johnstown, Pa. A five-ton electric traveling crane will be purchased.

The Aetna Foundry & Machine Co., Warren, Ohio, is planning the construction of an addition to its foundry.

The Hardware Specialty Mfg. Co., recently incorporated in Ohio, has purchased and is now operating the plant formerly owned by F. J. Shively Co., 118 Seventh Street, S. W., Canton, Ohio. The new company will continue to manufacture a complete line of kitchen knives and other high carbon cutting tools formerly made by the Shively company. Officers are: M. M. Moore, president and treasurer; Lew S. Motz, vice-president, and H. S. Ernst, secretary and general manager.

The Peerless Malleable Castings Co., Toledo, Ohio, has recently purchased at a receiver's sale the assets of the United States Malleable Iron Co. The Peerless Malleable Castings Co. is operating the Toledo plant of the United States Malleable Iron Co. at about 80 to 90 per cent of capacity, but has ceased operations at the Wauseon plant. The new compny is incorporated in Ohio with preferred capital of $250,000 and will continue in the manufacture of malleable iron castings.

The Garl Signal Co., capitalized at $100,000, has been organized at Akron, Ohio, to take over the good-will, basic patents, etc., of the Garl Co. The Garl Signal Co. will manufacture fire and police alarm signals for municipalities and industrial plants. Offices and factory are located at 61-63 Barges Street, Akron.

The Economy Engineering Co., Willoughby, Ohio, has let contracts for the erection of a one-story factory addition and a two-story office building.

Detroit

DETROIT, April 12.

CONTRACT has been let by the Flint Foundry Co., 802 West Kearsley Street, Flint, Mich., to William Bilsky, 716 Payne Street, for a one-story addition, to cost about $15,000 with equipment. J. U. Barrington is president.

The Stickley Brothers Furniture Co., Grand Rapids, Mich., has broken ground for a five-story addition to cost $100,000 with equipment. A general contract has been let to Jacob Herman & Son, Grand Rapids.

The Harvey Paper Products Co., Sturgis, Mich., has awarded a general contract to F. L. Shoemaker, Sturgis, for a one-story and basement addition, 60 x 160 ft., to cost about $55,000 with equipment.

The Detroit Garages, Inc., 510 Cass Avenue, Howard E. Coffin, president, has plans under way for an eight-story addition to its service, repair and garage building, to cost approximately $500,000 with equipment. R. O. Derrick, Inc., 120 Madison Avenue, is architect and engineer.

The Board of Education, Pontiac, Mich., has tentative plans under consideration for the construction of an addition to the high school to be equipped as an industrial arts building, to cost about $80,000.

The Ford Motor Co., Detroit, has taken bids for a one-story addition at its River Rouge plant, 60 x 180 ft., to cost $250,000 with equipment. Albert Kahn, Inc., Marquette Building, is architect. It also has plans at the office of the same architect for a two-story plant for its airplane manufacturing division, known as the Stout Metal Aircraft Co., at Dearborn, Mich., to cost $100,000 with equipment.

The Toledo & Western Electric Railway Co., Adrian, Mich., is said to be planning to purchase a rotary converter for installation in the power station at its local yards.

The Board of Education, East Lansing, Mich, plans the installation of manual training equipment in its proposed two-story and basement high school to cost $200,000. Bids will be asked on a general contract during the summer. J. N. Churchill, Prudential Building, Lansing, is architect.

The City Council, Hart, Mich., will proceed with the construction of a municipal hydroelectric power plant on the Pentwater River, for which a bond issue has been authorized.

The Jarecki Machine & Tool Co., 42 Market Street, N. W., Grand Rapids, Mich., has awarded a general contract to B. J. Hogan, Grand Rapids, for a one-story and basement addition, 100 x 147 ft., to cost $40,000. William M. McCarthy, Houseman Building, is architect.

Ground has been broken for an additional factory unit for the AC Spark Plug Co., Flint, Mich. The building will be 72 x 252 ft., one story, and of reinforced concrete. When completed the company will have a total floor area of over 12 acres, 4 acres of which were added in 1925, to take care of its rapidly expanding business.

Interests affiliated with the Covel Mfg. Co., Benton Harbor, Mich., have organized the Consolidated Boilers Corporation, and let contract for a manufacturing plant, 100 x 160 ft., which will be completed and occupied in about 60 days. The Consolidated Boilers Corporation starts in business with an authorized capital of $150,000, and will manufacture a water tube domestic heating boiler made entirely of steel.

The Keeler Brass Co., Grand Rapids, Mich., has awarded contract for an addition to its plant, to cost $60,000. The new building will contain 40,000 sq. ft. of floor space.

St. Louis

ST. LOUIS, April 12.

PLANS are being considered by the Progressive Brass Mfg. Co., 1711 Cherry Street, Kansas City, Mo., for a one-story addition to cost $40,000. E. J. Thomas is general manager.

The Missouri Engine Co., 2804 North Eleventh Street, St. Louis, manufacturer of semi-Diesel engines, parts, etc., has completed plans for a two-story addition, 125 x 145 ft., to cost $80,000 with equipment.

The Consolidated Cement Corporation, recently organized under Delaware laws, has completed plans for the purchase of the Fredonia Portland Cement Co., Fredonia, Kan.; the Great Western Portland Cement Co., Mildred, Kan.; and the Peninsular Portland Cement Co., Cement City, Mich. Plans are under way for expansion. To provide for the acquisition and extensions, the Consolidated company is disposing of a bond issue of $4,000,000.

The Board of Education, Pittsburg, Kan., plans the installation of manual training equipment in its proposed two and three-story junior high school to cost $300,000, for which bids are being asked on general contract. C. A. Smith, Finance Building, Kansas City, Mo., is architect.

The Arkansas Light & Power Co., Pine Bluff, Ark., plans to rebuild the portion of its power house at Tillar, Ark., destroyed by fire April 3; an official estimate of loss has not been announced.

The Kastler Body Mfg. Co., Inc., 1119 Campbell Street, Kansas City, Mo., manufacturer of automobile bodies, plans extensions and the installation of a planer, belt sander, rip saw and other wood-working tools.

The Western Land Roller Co., Hastings, Neb., manufacturer of road machinery, will erect a new one and two-story plant, 120 x 370 ft., to cost approximately $100,000 with equipment. Marcus L. Evans, Hastings, is architect.

The City Council, Chaffee, Mo., is considering the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks and sewage systems to cost $60,000. C. E. Smith, Railway Exchange Building, St. Louis, is engineer.

The Ozark Utilities Co., Rolla, Mo., is concluding negotiations for the purchase of the plans and property of the South Missouri Power Co., Greenfield, Mo., and contemplates extensions and improvements. It is purposed to issue stock and bonds in amount of $450,000 to carry out the project.

The Missouri Hardstone Brick & Tile Co., 706 Laclede Building, St. Louis, has plans under way for new works at Pacific, Mo., consisting of a main four-story structure, 60 x 100 ft., and two one-story buildings, 70 x 100 ft., and 40 x 70 ft., respectively, to cost $90,000 with machinery.

The Raymond Garage, Inc., 3740 Sullivan Avenue, St. Louis, plans the installation of repair shop equipment, including lathe, drill press, etc.

Fire, April 2, destroyed a portion of the power plant of the United Railways Co., St. Louis, and did considerable damage to the equipment.

The Moberly Paving Brick Co., Moberly, Mo., has preliminary plans for rebuilding the portion of its plant recently destroyed by fire, with loss reported at $75,000 including equipment. Warren L. Barr is president.

The Acme Foundry & Machine Co., Blackwell, Okla., has been organized with capital stock of $40,000 and will do all kinds of general machine shop work and also will do a jobbing foundry business, making gray iron, brass and aluminum castings. Mark D. Mitchell is president and E. L. Graham, secretary and general manager.

Canada

TORONTO, April 12.

THE machine tool market in this territory continues to show improvement. Sales the past week were much better than those of previous weeks this year, and while orders are mostly for one or two tools, the demand is diversified and of good volume. The Canadian Pacific Railway placed orders the past few days for several tools, and the Aluminum Co. of Canada also purchased equipment for a machine shop at Arvida, Quebec. The University of British Columbia, Vancouver, B. C., placed orders for a fairly large list of machinery with British manufacturers for its mechanical and electrical laboratories and the Spillers Canadian Milling Co. placed an order for complete flour mill equipment for its new Calgary plant with Henry Simons, Ltd., of Manchester, England. While the automotive industry is operating at a high production level machine tool buying on this account has not been very active. The majority of plants are well equipped and current purchases are almost entirely for replacement.

Plans are being prepared by Nicholas, Sheppard & Masson, architects, Windsor, Ont., for a $50,000 administration building at Sandwich, Ont., for the Canadian Salt Co., Ltd., and also for the installation of two 1000-hp. boilers and turbine generators, the latter to be installed in a chemical plant.

Duntile & Builders Supplies, Ltd., Hamilton, Ont., will start work soon on the erection of a factory for the manufacture of duntile.

The Canada Prest Air Corporation, Bank of Nova Scotia Building, Montreal, is contemplating the erection of a plant at Halifax, N. S., to cost $500,000, on which work will start during the summer.

The Canadian National Railways, McGill Street, Montreal, are contemplating building a car repair shop at Jonquieres, Que., at a cost of $10,000.

Fittings, Ltd., 135 Bruce Street, Oshawa, Ont., manufacturer of pipe fittings, chain beltings, etc., will build an addition to its plant.

The Rose Excelsior Mills, Ltd., Pickering, Ont., is having plans prepared by Ellis & Belfry, 189 Church Street, Toronto, Ont., for an addition to cost $50,000.

The Stuebing Truck Co., recently purchased the plant at Granby, Que., formerly owned by the Bradford Brothers, and is having plans prepared for its reconstruction. F. Rewyer, of the Stuebing Truck Co., Cincinnati, Ohio, will be in Granby shortly to superintend the installation of equipment, and it is expected that the plant will be in operation in the early summer.

Western Canada

The Victoria Roofing & Paper Co., Victoria, B. C., will build an addition to its plant at a cost of $250,000 to take care of increased export business. It also contemplates the addition of buildings and machinery to manufacture cardboard and thick ply board.

The New Westminster Harbor Board, New Westminster, B. C., proposes to start work soon on the construction of a grain elevator at Port Mann, B. C.

Merritt, B. C., contemplates an addition to the waterworks plant and system to cost $35,000.

The Saskatchewan Pool Elevators, Ltd., Sherwood Building, Regina, Sask., is receiving bids for the erection of 30 elevators, of 32,000 bu. capacity each, to be erected at points throughout Saskatchewan; elevators to be completed by Aug. 1.

Foreign

BIDS will soon be asked by the Railway Board, State Railways, Wellington, New Zealand, for the construction of new locomotive shops at Petone, near Wellington, to be carried out in connection with a general reconstruction and improvement program. The shop group and yards will approximate 65 acres, and are estimated to cost about $1,500,000 with equipment. It is also purposed to construct four other repair plants, including facilities for car work, in principal cities on the lines, to cost approximately $3,500,000 with equipment. The complete project will be carried out over a period of 36 months. Additional information at the office of the Bureau of Foreign and Domestic Commerce, Washington, reference No. 202834; or at the American Consulate, Wellington, J. C. Hudson, vice-consul.

The Gillette Safety Razor Co., Boston, has acquired a substantial interest in the companies of Rotbart and Mond Extra, Berlin, Germany, recently merged with a capital of 3,000,000 m., specializing in the manufacture of razors and other fine steel products. The Gillette company will take an active part in the management of the acquired concerns for the development of its type of razors and blades in Germany, for which expansion is being arranged.

The Ministry of Agriculture, Prague, Czechoslovakia, is arranging a measure to permit the State to assist and finance the construction of isolated electric light and power plants in about 250 towns and villages. It is proposed to provide an initial fund of about $174,000. The American Consulate, Prague, C. S. Winans, consul general, has information regarding the project.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (No. S. 3241) from a company at Florence, Italy, desiring to get in touch with American manufacturers of rubber tiles.

The American Consulate, Geneva, Switzerland, Robert D. Longyear, consul, indicates in a recent official communication a potential market for electric hand driers and kindred electrical appliances, and asks catalogs and quotations c.i.f., together with data regarding consumption, etc.

Industrial News Notes

La-Bar Steel Products, Marine Building, Philadelphia, has been incorporated to engage in the warehousing and distribution of steel products. The company will specialize in reinforcing bars and reinforcing mesh, steel lumber and sash, waterproofing, lathing and concrete specialties.

Hydraulic machinery contracts for seventeen units totalling nearly half a million horsepower have lately been secured by the William Cramp & Sons Ship & Engine Building Co., Philadelphia, its subsidiaries and licensees. The turbines, water wheels and other hydro-electric devices comprising these orders will be installed in Brazil, Japan, Canada and the United States.

The American Bronze Corporation, Berwyn, Pa., following a receivership and sale, has been reorganized under the name American Non-Gran Bronze Corporation. The product of the company will continue to be Non-Gran bearing metal, and bars, castings and bushings of bronze. The officers of the new company are: Philip E. Guckes, president Integrity Trust Co., Philadelphia, president; Reeves Kemp Johnson, formerly of the Baldwin Locomotive Works, vice-president; P. Exton Guckes, secretary and treasurer; John McMahon, for many years in charge of production for the old company, plant manager. Garrison Ball and Edward J. Sullivan of the sales force have been retained.

The Cumberland Steel Co., Cumberland, Md., has opened a Detroit office at 1908 Washington Boulevard Building. George E. Quigley, Inc., will be district sales manager for all of the products of the company.

The Bertolette Used Machinery Exchange, Fourteenth and Provost Streets, Jersey City, N. J., has been formed by Chester Bertolette and his two sons, Daniel A and Chester Bertolette, Jr. The sons, who formerly were directors and officers in the Machinery Sales Corporation,

The New Madison Square Garden, New York, is changed from a skating rink to a boxing match arena over night. Immediately following a hockey game, warm brine is circulated through the refrigeration pipes, which are imbedded in the concrete floor. This warm brine loosens the ice, and two Baker industrial trucks, each operated by a 12-cell Exide Ironclad battery, break up the ice and shove it into a convenient opening in the arena and into a truck below. The ice is 1½ in. thick and covers over 24,000 sq. ft. It is stated that the trucks replace 30 men working from 8 to 10 hr.

have sold their interest in that company. The father was formerly treasurer New York Machinery Exchange. They have formed the company to deal in high-grade used machinery. Their warehouse at Fourteenth and Provost Streets, Jersey City, covers approximately 30,000 sq. ft. of space, with railroad siding.

The Ohio Electric & Controller Co., Cleveland Ohio, has appointed the following representatives: Railway Power & Engineering Corporation, Ltd., 133 Eastern Avenue, Toronto, Ont.; Industrial Supply Co., Brown-Marx Building, Birmingham, Ala.

Rogers, Brown & Crocker Brothers, Inc., 332 South Michigan Avenue, Chicago, has been appointed exclusive sales agent for East Jordan charcoal iron, produced at the East Jordan plant of the Michigan Iron & Chemical Co.

Assets of the Hall Switch & Signal Co., Garwood, N. J., have been purchased by the Union Switch & Signal Co., Swissvale, Pa. Operations at the Garwood plant are being discontinued.

The Watson-Stillman Co., after May 1, will have its main offices and sales department located in the Evening Post Building, 75 West Street, New York.

The Loshbough-Beck Press Co., Elkhart, Ind., is taking steps to change the name to the Federal Press Co. J. E. Loshbough, president, was formerly president and part owner of another Elkhart firm which bears his name. Last September he sold his interest in that company and organized the Loshbough-Beck Press Co. This was not a reorganization of the company Mr. Loshbough formerly headed and none of the stockholders of the Loshbough-Beck Press Co. are stockholders in the old company, nor is there any other connection of any kind between the two companies. The officers are: J. E. Loshbough, president and general manager; L. E. Loshbough, vice-president; H. M. Beck, secretary-treasurer.

The U. T. Hungerford Brass & Copper Co., Lafayette, White and Franklin Streets, New York, has apened a new warehouse at 312-314 North Second Street, St. Louis. The company is now established there and ready for business, in its own building, remodeled and equipped with extensive assortments of "Star Brand" copper, brass, bronze and nickel silver sheets, tubes, rods, wire, etc.

Operation of the plant of the International Bolt Co., at 412 North Thirty-second Street, Louisville, Ky., was started April 6. Officers of the company, which have been located in the Louisville Trust Building, are to be moved to the plant. T. S. Morris of Dayton, Ohio, is the production manager. Officers and directors are: President, John E. Greeley; vice-president, Edward M. Riedling; secretary-treasurer, James H. Richmond.

The Atlantic Roofing & Supply Co., Inc., was organized on Feb. 1 to operate in Savannah, Ga., serving the trade in Georgia, Florida, Alabama and South and North Carolina, with sheet metals, roofing products and roofer's and tinners' supplies. The company has leased warehouse space on the Merchant's & Miner's Terminals, Savannah. The company also contemplates the manufacture of portable steel buildings and metallic paints in the near future. L. Kenneth Roberts is president and general manager, and W. Frank Cook, vice-president and treasurer.

Offices of the American Engineering & Sales Corporation have been opened at 1317 F Street, N. W., Washington, by Walter N. Polakov, president; Wallace Clark, vice-president and secretary, and I. B. Richman, treasurer. Former Senator Marion Butler is the corporation counsel. Mr. Polakov is a consulting engineer, specializing in power plants and in the elimination of waste in manufacturing. Mr. Clark is a consulting management engineer and is in charge of organizing manufacturing and industrial enterprises. Mr. Richman is an importer and exporter, with many years' experience as manufacturer's agent. The service covers engineering, management, patents and other matters and is developed particularly along the line of handling foreign business.

The Connors Steel Co., Birmingham, is building an addition to its Woodlawn plant for the manufacture of rail-carbon, reinforced concrete bars, light angles, flas, etc. The addition will produce a class of products new to the district.

The Foote Brothers Gear & Machine Co., Chicago, has appointed T. R. Sanders, 180 Milk Street, Boston, as district representative. Mr. Sanders will cover Rhode Island and the eastern half of Massachusetts and operates under the direction of the New York office, in charge of J. R. Shays, Jr.

Branch Office Representatives of The Iron Age

Editorial

Chicago, Otis Bldg.....R. A. Fiske
Pittsburgh, Park Building.....G. F. Tegan
Cleveland, 1362 Hanna Building.....F. L. Prentiss
Cincinnati, First National Bank Bldg.....Burnham Finney
Boston, Park Square Bldg.....Gerard Frazar
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New York, 239 West Thirty-Ninth St.,
W. C. Sweetser, Chester H. Ober
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